

Report to the TWG from the TWG Cultural Resources PEP Ad Hoc Committee

April 26, 2002

BACKGROUND

The Cultural Resources PEP was conducted in March 2000. It was sponsored by both the Grand Canyon Monitoring and Research Center (GCMRC) and the Bureau of Reclamation (Bureau). This PEP addressed four areas: 1) monitoring and compliance; 2) archaeology; 3) Native American issues; and 4) geomorphology. Programmatic Agreement (PA) signatories participated in the PEP river trip and public sessions. A final report on the PEP was presented to the GCMRC and the Bureau on June 26, 2000.

Comments were received on the PEP from numerous agencies and contractors. These comments are appended.

At the Technical Work Group (TWG) meeting of September 6, 2001, there was request to create an ad hoc committee to review the recommendations of the cultural resource PEP and provide a report of recommendations to the TWG. The following were assigned to the ad hoc committee: Matt Kaplinski, Bob Winfree, Kurt Dongoske, Mary Barger, Loretta Jackson, Nancy Coulam, Ted Melis and Jan Balsom.

The cultural resources ad hoc committee met on October 2, 2001 at the NPS office in Flagstaff. The following were in attendance: Matt Kaplinski (NAU), Mary Barger (Western), Nancy Coulam (BOR), Jan Balsom (NPS), Ruth Lambert (GCMRC), Lisa Leap (NPS), Jen Dierker (NPS), Robert Begay (Navajo Nation), Mike Yeatts (Hopi Tribe), and Kurt Dongoske (Hopi Tribe) was on speaker phone.

PEP RECOMMENDATIONS

The PEP report made 11 recommendations, the first three were identified as “core” recommendations.

- 1) Complete and Adopt a Historic Preservation Plan (HPP)
- 2) Expand Native American Involvement
- 3) Improve Coordination of a Complex Program
- 4) Refine the Definition of the Area of Potential Effect (APE)
- 5) Reassess Geomorphology Research Priorities within the GCMRC Cultural Program
- 6) Redefine the Cultural Resource Monitoring Programs
- 7) Prepare a systematic Evaluation of Historic Properties
- 8) Prepare a Cultural Resource Database Plan
- 9) Develop an Integrated Historic Property Treatment Plan
- 10) Expand Public Outreach and Education Activities
- 11) Improve Contracting Procedures

HISTORY OF CULTURAL RESOURCES PEP

The TWG and PA signatories have provided input to the cultural resources PEP. The PA signatories and the TWG have taken action on certain PEP recommendations. The following is a calendar listing of actions and activities related to the cultural resource PEP and the TWG and the PA signatories.

At the May 10, 2000 TWG meeting, Dr. William Doelle gave a presentation on the PEP. Dr. Doelle was the lead for writing the cultural resources PEP document.

GCMRC mailed the draft PEP report to the TWG and AMWG at the end of June, 2000.

On July 7, 2000 Ruth Lambert made a presentation to the AMWG regarding the PEP. She summarized its history, including the four charges given to the PEP of 1) identifying strengths, 2) identifying weaknesses of the programs, 3) identifying what management objectives should be formulated for the cultural programs, 4) what recommendations are there to improve the programs. She read all 11 of the PEP recommendations and invited AMWG members to participate in the July 18-19, 2000 meeting of the PA signatories to discuss the PEP recommendations. She also presented initial scopes of work for some of the projects that the GCRMC would implement immediately.

On July 18-19 2000, the PA signatories met with GCMRC staff to review the PEP recommendations and work towards consensus. The meeting resulted with consensus on all 11 primary recommendations, which are listed above. The PA signatories did not always agree on implementation of these recommendations. As a result, there were clarifications and comments from individual PA signatories about the specific recommendations or comments made by the PEP. NPS provided written comments (Attachment 1). The group did not concur on recommending a new federal cultural resource position to coordinate efforts between the Bureau and GCMRC. The group also did not concur that the NPS and Bureau should choose an arbitrary percent to represent the amount the agencies were responsible for monitoring or mitigation of erosion occurring with the Colorado River corridor (Attachment 2).

On August 18, 2000 Nancy Coulam mailed out a letter to all PA Signatories describing what transpired at the July 18-19, 2000 meeting (Attachment 3). She incorporated a list of proposed action steps that Bureau was proposing to implement based on the PEP. She included a rough draft Scope of Work for the Historic Preservation Plan (HPP). For each of the PEP recommendations, she listed where the PA Signatories had reached agreement, and what the proposed actions were related to the agreement. The letter asked for comments or corrections before Aug. 25, 2000.

The PA Signatories held another meeting regarding the PEP on August 24, 2000 at GCMRC Offices in Flagstaff. The purpose of the meeting was to consult on any recommendations that need additional consultation, and to agree upon which recommendations need to be implemented in what order during FY01 and FY02.

At the August 31, 2000 TWG, GCMRC (Ruth Lambert) made a presentation on budget and program related to the PEP recommendations. This included funding parts of the Historic Preservation Plan, a Holocene mapping study, and a check dam efficacy study.

At the November 8-9, 2000 TWG meeting, Randy Peterson reported that the PA signatories have met and addressed the 11 recommendations and have drafted a 3-year plan to accomplish them all. Nancy Coulam gave a briefing on adopting the PEP recommendations with the HPP as the top priority. Nancy passed out a spreadsheet showing funding activities through 2003 including joint projects with GCMRC. Nancy asked the TWG about convening a workshop to determine what it would take to separate effects of dam operations from dam existence and natural processes. Nancy also stated there could be a white paper on the topic instead of a workshop. The TWG discussed this and there were no objections to a workshop. At the request of TWG, Nancy agreed to send a letter to TWG on the PEP recommendations and how they should be done. Ruth Lambert and Barry Gold agreed to do a similar letter from GCMRC (Attachment 4).

At the January 11, 2001 AMWG meeting, the Bureau provided hand outs on the 2001 and 2002 cultural resources program budget and GCMRC provided handouts for their 2002 budget. This included a discussion of the 11 recommendations of the PEP, and how the PA signatories had approved them. Randy Peterson had a spreadsheet of the activities approved by the PA group for the next three years for each piece of the HPP. AMWG approved the GCMRC and Bureau 2002 budget.

On Feb. 9, 2001 the Bureau sent a letter to the Advisory Council on Historic Preservation with a copy to all PA Signatories describing the Bureau's response to the PEP and responding to questions from the Council about the PEP and the Bureau's future actions or plans.

At the Sept. 6, 2001 TWG meeting, Randy Peterson reported that monitoring costs for the cultural program will continue until the HPP is completed. Randy clarified that the HPP is necessary as the guidance document on how to proceed with the cultural program. Kurt Dongoske requested clarification on a budget for archaeological mitigation. As a result of this conversation on budget items for the cultural program, Bob Winfree made a motion to establish an Ad Hoc Committee for the Cultural Resources PEP.

BUDGET CYCLE FOR PEP RECOMMENDATIONS

Parts of the PEP recommendations have been initiated and others are already in the approved budget cycle. The HPP will be an encompassing document with many chapters. Many sections will be contracted.

HPP

HPP Introduction	2002
Research Design	2001-2002; awarded by GCMRC
Monitoring Plan	2002-2003
Treatment Plan	2003
Database Plan	2002-2003

Tribal Consultation Plan	2001-2002; awarded by the Bureau
Public Outreach Plan	2003

Other PEP recommendations include:

Evaluating check dams	2001-2002; awarded by GCMRC
Holocene terrace mapping	2002-2003
Geomorph workshop	2002

CULTURAL RESOURCES AD HOC COMMITTEE RECOMMENDATIONS

The ad hoc committee reviewed the PEP recommendations and discussed issues that should be identified to the TWG. Those discussions resulted in the ad hoc committee listing specific recommendations to the TWG.

- 1) Approve all 11 PEP recommendations with the following clarifications.
- 2) PEP Recommendation #1. As part of the HPP, the PEP recommended a Traditional Cultural Property (TCP) Plan. The ad hoc committee does not believe it is necessary and is currently being handled by the Bureau of Reclamation through Determinations of Eligibility with each tribe and will be handled in the future through the consultation and monitoring plans.
- 3) PEP Recommendation #1. As part of the HPP, the PEP recommended a Cultural Resource Database Plan. The Cultural Resource Database Plan proposed by the PEP is underscoped. This project will be much more involved than recommended by the PEP and the first step is to start project planning, gather the data requirements that the GCMRC or database users have, get agreement on the goals and purpose of the database management project.
- 4) The PEP recommended an Introduction chapter for the HPP to provide a framework or structure for all the subplans. The Bureau had proposed contracting it in FY2002. However, this timing will not work since much of the contents for the Introduction will be contingent on the conclusions of the research design and treatment plan. Therefore, the ad hoc committee recommends that the Introduction chapter start with an inclusion of the background portions available in the draft 1997 HPP. This background can form the basis for the Introduction chapter until all parts of the HPP are written. At that time, the Introduction will need to be revised to incorporate all the subplans.
- 5) The PEP recommended a Monitoring Plan and a Treatment Plan for the HPP. The ad hoc committee recommends these be awarded at the same time to the same contractor since there is a great deal of overlap in these plans.
- 6) As part of the HPP, the PEP recommended a Public Involvement Plan. The ad hoc committee recommends that this be subsumed under the AMP Public Involvement Plan and that the AMP plan have a cultural resource section.

7) The Bureau of Reclamation's implementation plan for the HPP called for a NAGPRA Plan of Action and a curation plan. The ad hoc committee believes that these plans should not be done through the AMP, but that they are necessary plans that are a legally mandated responsibility of each agency involved.

8) Regarding the PEP recommendation to Improve Coordination of a Complex Program, the ad hoc committee recommends that the cultural resource program be on the TWG/AMWG agendas at least once a year.

9) The PEP recommendation for Improving Coordination of a Complex Program was to create another federal position. To respond to this need, the ad hoc committee recommends that Ruth Lambert's position should be devoted only to the cultural resources program.

10) The ad hoc committee recommends that the TWG support a standing cultural resources ad hoc committee to the TWG.

ATTACHMENT 1

NPS COMMENTS ON PEP

Grand Canyon National Park Summary Review of the
"Cultural Resource Program Assessment" (PEP review) July 21,2000
(Original NPS draft 7/5/2000, updated September 27,2001)

Grand Canyon National Park (GRCA) personnel support the three core recommendations and eight supporting recommendations suggested by the PEP panel. However, we have found several contradictory statements concerning implementation of the recommendations that lead us to request clarity on those items. The contradictions are seen between the subpanels and at times within the same subpanel (i.e., the compliance subpanel). Furthermore, throughout the report it is difficult to discern which cultural program the panel members were referring to and making recommendations to – Tribes, NPS, BOR, or GCMRC? The review clearly focuses on the NPS archaeological monitoring program; therefore, GRCA personnel assume that many of the recommendations are geared toward the NPS monitoring program. We find this to be inherently biased and unfortunate because the NPS program comprises less than 20% of the entire cultural program (combination of PA and GCMRC). Several tribes have been monitoring sites for at least 8 years and no critique of their monitoring efforts or databases was offered, let alone acknowledged. Additionally, we find the PEP to have fallen short in its intended output in that the panel was designed to evaluate monitoring protocols and very little of the cultural PEP addressed any questions related to actual protocol evaluation.

The following comments provided by GRCA personnel focus on the summary Core and Supplementary Recommendations sections. The subpanel reports are not reviewed individually because their contents are sufficiently reflected within the summary recommendations.

We participated in a review of the PEP on July 18,2000 and have reviewed the notes from that meeting. We have also reviewed the summary write-up provided by BOR of that meeting and find that while the general statements are accurate, none of the caveats attached to the recommendations were included in the summary notes, and some of the general concepts appear to have been lost in the process.

Core Recommendations

1. Complete and Adopt an HPP as Top Priority

GRCA personnel agree with this recommendation. Given that the PA group has not been able to come to resolution on the 1997 draft HPP, we concur that the document should be contracted. However, we believe that whoever is the contractor must work closely with PA members and GCMRC personnel. Several meetings should be involved, and the PA members and GCMRC cultural manager should review several drafts before a final HPP is completed. GRCA personnel strongly support the recommendation given specifically by both the geomorphologists and compliance subpanels that the draft HPP of 1997 be used as the guiding document.

During the PA review, it was agreed that the HPP should be a short, flexible guiding document that provided definitions for roles, responsibilities and relationships for the various entities involved in the PA process. The HPP should provide a context for solutions, and set the overall framework for historic preservation. We all agreed that the plan itself should be the higher level framework, supported by subsidiary documents.

After reviewing both GCMRC and BOR work plans, we find that the subsidiary plans are scheduled over the next 4 years, but there is no guiding document, no HPP. What is projected is a series of independent plans with no overarching guidance and no integration. We find this very troubling given the importance of the HPP to preservation and management of National Register eligible properties along the river corridor.

years. GCMRC and BOR may be coordinating their contracting of projects, but the overall program coordination with other affected entities has not occurred. The PA component, and the NPS portion of that, is a small component in the larger GCMRC and Adaptive Management framework. Nothing that has been proposed looks at improving coordination. We find that to be a significant gap.

Supplementary Recommendations

1. Refine Definition of the Area of Potential Effect (APE)

GRCA personnel have a fundamental concern with the inclusion of this topic in the PEP review as the APE was decided in the EIS as the maximum cfs level that could be released by Glen Canyon Dam. This maximum of 256,000 cfs was further supported by the solicitor (Loveless, 1999). That said, we concur with the definition put forward by the PEP that the APE is defined as the Holocene sediments. The PEP compliance subpanel states that "BOR should make an immediate determination as to what the APE is, so that the compliance efforts can move forward" (Doelle 2000, pg. 15). It does not mean "BOR must accept responsibility for every adverse effect to historic properties within the APE" (Doelle 2000, pg. 16).

In the PA review of the PEP recommendations, concern was raised over the time necessary to map the full extent of the Holocene sediments vs. the time needed to define the stage relationship of the 256k cfs. Additionally, we note that the PEP subpanel felt that expending additional dollars on defining the sediments was questionable. That concern has been raised repeatedly, yet BOR insists that funds be spent on determining a clearer line on these deposits. Hundreds of thousands of dollars have already been spent on this endeavor, with no clearer understanding. We continue to question the fiscal prudence of expending additional funds on these types of projects.

It is our understanding that the LIDAR technology currently being used by GCMRC has the capability to provide the map definition for the APE. All work could be done with existing data (both LIDAR and Photogrammetry and studies completed by Thompson and Potochnik 2000 and Wiele 2000). This could also be combined with a project GCMRC is currently planning for mapping the vegetation zones. Including the identification of the Holocene deposits in the mapping work would be the most efficient, thereby eliminating the need for a separate endeavor.

As we read the PEP comments, we noted that the question of erosion was ubiquitous, a question that has plagued us for over 15 years. Attempting to separate out naturally occurring erosion from erosion exacerbated by the dam is one that has been perplexing. The panel concluded that distinguishing natural erosion from dam caused erosion is a task that is probably "not cost effective." The PEP continues by noting, "Glen Canyon Dam has made it (the sedimentary system of the Canyon) increasingly sediment-starved, and thus erosion rates must be increasing at some scale and dam operations must contribute to the spatial and temporal variability in rates of erosion of deposits along the river corridor (Doelle 2000, pg. 39). We believe this to be true and suggest that the AMP process support the efforts of the NPS in addressing the erosion as a collective problem that needs to be incorporated into all our current work plans before we loose more resources.

2. Prepare Systematic Evaluation of Historic Properties

This section outlines more detail for a research design. The research design should be contracted out with the understanding that the contractor will work closely with all PA members and GCMRC. Similar to the HPP, several drafts should be disseminated to the members of the PA and GCMRC prior to a final. GRCA staff agrees that the research design should incorporate questions involving geomorphic and paleoclimatic processes with archaeological questions that are river specific and Colorado Plateau in general. Some of this information already exists in the 1997 draft HPP (Draft HPP June 1997, pgs. 55-69). Tribal involvement is critical in the development of this research design in order to capture their views and concerns.

We believe that these recommendations are specific to the NPS monitoring program, although evaluation of the tribal and GCMRC monitoring programs were to be part of the PEP review. Given that the recommendations appear to be exclusive to the NPS program, we concur and believe the current program has been oriented in the way suggested by the PEP. Furthermore, we acknowledge that #4 is primarily an NPS responsibility, one that is accommodated within our internal management program.

We believe that monitoring should also document the progressive erosion where treatment **has not yet been implemented or planned**, as new discoveries are constantly changing the cultural landscape of the river corridor. One recommendation included in the PEP was the value of repeat, total station mapping. This program, undertaken by the NPS, has been suspended by BOR. We believe reinstitution of this program would be of great benefit in addressing the basic elements of the monitoring program, that of evaluating change. The total station mapping program was terminated by BOR, although both GRCA and other outside reviewers (Neal and Gilpin 2000) believe it should be continued. The PEP also believe that "the repeat total station mapping has further potential for monitoring sites of high research value or sites where there is a need for better understanding of erosion processes. Consideration of reinstituting this mapping should be part of the research design, monitoring plan, and treatment plan development (Doelle 2000 pg. 28).

The GRCA monitoring program is continually discovering newly uncovered resources. We believe the monitoring program should include an inventory component, most likely a sample re-survey of the most at-risk areas of the corridor.

NPS is the land manager and should be responsible for cultural site monitoring on NPS lands. GRCA has numerous on-going and overlapping programs that address archaeological sites that are also reviewed under the GCMRC/BOR program. For example, Fee Demo projects, Colorado River Fund projects, and a Vanishing Treasures program, all have additional data with sites included in the GCMRC/PA program. Additionally, the inconsistencies of different people monitoring every year promotes problems in the data structure, replication of data, subjectivity, unfamiliarity, etc. To have the archaeological monitoring program contracted out will only promote insufficient, miscellaneous and incomplete data.

Monitoring is a long-term process and needs to address the quantification of data, identification of new discoveries, and the means of interpreting qualitative data with quantitative data. Monitoring must be included as an element of the research design, and it must also be an aspect of management to evaluate the effectiveness of treatment and long-term management of the dam. The scale of the monitoring must also be included, small scale (on-site effects), and large scale (landscape) evaluations.

The PEP review fell short in any real review of monitoring protocols. This is unfortunate and severely affects the utility of the PEP review, especially since it was to be a protocol evaluation, primarily for monitoring.

5. Prepare a Cultural Resource Database Plan

The PEP panel recommends that GCMRC house all the cultural information. We do not believe that GCMRC has the internal capabilities to be responsive to all the needs for cultural resources data management. NPS is the land manager and should be the repository for cultural site data for resources on NPS lands. GRCA has numerous on-going and overlapping programs that address archaeological sites that are also reviewed under the GCMRC/BOR program. For example, Fee Demo projects, Colorado River Fund projects, and a Vanishing Treasures program, all have overlapping data with sites included in the GCMRC/PA program. To have the GRCA archaeological monitoring program information housed at GCMRC will only promote inadequate, disparate and partial records. GRCA personnel agree to share appropriate data, on an as needed basis, with GCMRC in support of integrating all the sciences. For

8. Improve Cultural Resource Contracting Procedures

Many questions surface in reply to the discussions and recommendations presented in this section. First, GRCA personnel agree that Native American participation should increase through the process of contract work. However, it is unclear how the tribes become more involved. Second the PEP panel addresses contracting out work for short and medium labor and expertise, but what about long-term monitoring? Third, the PEP panel, in general, does not recommend sole source contracts and set-asides. The problems that could potentially occur involve tribal monitoring and NPS monitoring. For example, tribal monitoring programs consist of identifying several condition assessments of traditional cultural properties (TCPs). The specific tribes should identify these TCPs, not a contractor. NPS monitoring is a long-term endeavor and cannot be done in any consistent manner through contracting. Contracting on-site monitoring poses a host of problems for the NPS as the land manager that cannot be adequately addressed through the competitive bid process. The information gathered through monitoring triggers the treatment or management of sites, from no treatment to data recovery. NAGPRA and ARPA considerations must also be incorporated, something difficult to do in contract situations.

GRCA personnel support monitoring methods similar to the ones completed by GCMRC. This type of monitoring assists in answering the larger scale question related to the Grand Canyon Protection Act of 1992 – what are the effects of dam operations and how can the dam be operated to alleviate some of these effects.

We are all familiar with the difficulties in the governmental contracting process. It would be wise of all interested parties to become more familiar with the process and investigate ways to use the contracting process to facilitate the most efficient ways of managing cultural resources.

ATTACHMENT 2

PA SIGNATORIES RESPONSE TO PEP WITH DRAFT PLAN

*Comments by Grand Canyon Programmatic Agreement Signatories on
Cultural Resources Protocol Evaluation Panel Recommendation Review and Draft Action Plan*

2. Expand Native American involvement at multiple levels.

Comments by PA Signatories:

- 1. Tribes should evaluate and consider the utility of developing Memorandums of Understanding (MOU) with the Federal agencies and possibly with the AMP to improve involvement and communication.*
- 2. Write a Native American Consultation Plan for improving tribal involvement in the PA program, GCMRC programs, and the AMP in general. The plan should define desired working relationships and processes. The plan should include descriptions of trust assets and tribal interests as they relate to these programs.*
- 3. The National Register of Historic Places evaluation of Grand Canyon as a traditional cultural property should be completed.*
- 4. Tribes need to define the values of historic properties and elements of the traditional cultural property that are important to them. The tribal values need to be incorporated into the HPP and subsidiary plans, especially the systematic assessment of properties.*
- 5. The GCMRC should establish a Cultural Resources Task Group at GCMRC, emphasizing tribal involvement and consultation.*
- 6. Tribes should be involved early in planning stages of GCMRC programs and all AMP programs.*
- 7. Existing agreement documents, etc., should be reviewed and possibly revised to improve communication and involvement.*
- 8. Tribal perspectives need to be incorporated in Grand Canyon ecosystem management. Many of the tribal concerns identified in the PEP report can be addressed through better program coordination, information dissemination, and the successful integration of traditional values and concerns.*
- 9. The Hopi Tribe's suggestion that AMP participation, tribal monitoring programs, and tribal research projects be separated should be explored.*
- 10. The general concerns of tribes and the values of historic properties and the TCP that are important to them need to be developed so they can be conveyed to contractors and others.*
- 11. The problems with tribal integration may lie at the level of implementation of the various science and research programs, not at the higher AMWG levels.*
- 12. There is a need for formal mechanisms for tribes to get briefed or provide input on various research projects that are being proposed.*
- 13. Where data needs are compatible, tribes should seek to form alliances with other scientists to form more holistic studies while minimizing redundancy. Better dissemination of information regarding projects that are proposed at an early stage can allow these partnerships to be pursued.*

3. Improve coordination and integration of a complex program.

Comments by PA Signatories:

- 1. All parties need to identify their roles, responsibilities, authorities, and interests. This written identification will be included in the HPP.*
- 2. GCMRC and PA programs need to be integrated and coordinated. Better clarification of the relationships between GCMRC and PA programs would be helpful.*
- 3. Decision-making processes need to be articulated, and communicated with all parties. 4. Interdisciplinary communication needs to improve within the AMP.*
- 5. Projects and plans need to be adequately staffed and funded.*
- 6. Cultural resource monitoring should be integrated with other AMP monitoring programs, as appropriate.*
- 7. A new position of senior cultural resource manager is not accepted at this time. If the HPP provides sufficient clarification of responsibilities and provides a framework for integration and decision-making, this position should not be necessary.*

4. Refine the definition of the Area of Potential Effects (APE).

PEP Recommended Definition: The APE is defined as the full extent of mainstem Colorado River Holocene sediments along the river corridor. This includes alluvium, interfingering or overlying hillslope and debris fan deposits, and genetically related aeolian deposits. It consists of: a) Colorado River alluvium arranged as a flight of inset terraces and underlying fill deposits; b) aeolian deposits that originate by deflation of Colorado River alluvium that is transported and emplaced elsewhere in the river corridor; and c) fluvial and debris flow deposits of tributary debris fans as well as colluvium that interfingers and buries other Holocene deposits along the river corridor.

Comments by PA Signatories:

- 1. The APE makes sense for research and for inclusion in the research design; however, it should not necessarily replace the current definition of the APE.*
- 2. The APE is the area where potential for effects is considered—it does not mean the agencies or tribes are responsible for every effect on cultural resources in the area (whichever APE is adopted).*
- 3. The PEP-recommended APE should be adopted only after the information needs listed below are addressed.*
- 6. Besides Reclamation, other agencies and the tribes have their own responsibilities and authorities for compliance that geographically overlap within the APE. These areas of overlap should be mapped within the geographical space defined as the APE.*
- 7. The identification of the processes that create adverse effects within the APE should be on a case-by-case, or site-by-site basis.*

Information Needs:

- A. Need a time and cost estimate for mapping the full extent of Holocene sediment as compared with the time and cost of mapping the flow-based definition of APE (i.e. including direct and indirect effect flow lines).*
- B. Need time and cost estimates for geomorphologic research that would define, model, and map existing and projected effects of dam operations.*
- C. Need additional work on the identification of impacts of dam operations on biological resources that are contributing elements to the traditional cultural property of the canyon.*
- D. Need additional information on the causes of effects.*

5. Prepare a systematic evaluation of historic properties for the PA program.

Comments by PA Signatories:

- 1. A systematic evaluation of the relative values of the historic properties should be prepared.*
- 2. Since the majority of sites were originally determined eligible to the National Register under Criterion D for their archeological information value, a research design should be prepared that formulates questions important in history (including tribal history), regional archeology, geoarcheology, geomorphology, and paleoclimatology.*
- 3. Once the research design is completed, a site-by-site condition assessment and reevaluation of eligibility for the National Register should be completed. All categories or types of sites and site-specific elements of the cultural landscape need to be included in the National Register assessment and evaluation.*
- 4. The condition assessment should be included in the database and used in preparing the treatment plan.*
- 5. Tribes should be involved in eligibility evaluation, research design formulation, and implementation of the research design, treatment plan, and systematic evaluation of properties.*
- 6. Previously collected samples should be processed and reports finished.*
- 7. Contract for the research design using a nation-wide procurement process.*
- 8. Integrate the research design and condition assessment with the HPP.*
- 9. Complete the determination of eligibility of the canyon as a traditional cultural property.*
- 10. Research questions should be posed at a regional scale.*
- 11. The research design must include a system for prioritization of work, a method or process to know when research questions have been answered, and when features or property types are providing redundant information.*
- 12. The scale at which research questions are pursued will be affected by the potential for treatment.*

6. Reassess geomorphology research priorities.

Comments by PA Signatories:

- 1. Geomorphologists, paleoclimatologists, or geoarcheologists should work with cultural resource personnel in formulating research designs and questions, and in planning and conducting all field treatments.*
- 2. Additional geomorphological, geoarcheological, paleoclimatic research is needed to define effects of dam operations and to differentiate operational effects from effects of natural processes and dam existence. This may prove costly and take considerable time, however, most parties agree it is important research.*
- 3. Additional geomorphological, geoarcheological and paleoclimatic research is needed to determine effective treatment strategies and to improve integration with natural resource programs.*
- 4. Geomorphological research should locate specific places within the APE where erosion may be attributed to dam operations or where it is a function of natural processes or dam existence.*
- 5. Research in geomorphology should focus on answering general, archeologically important questions such as site formation processes, aeolian processes, and how interpretation of the past is biased by the long-term preservation of Holocene deposits.*
- 6. Geomorphological research needs to evaluate existing stabilization efforts and make recommendations about other possible treatments.*
- 7. Fundamental, process-based geomorphologic research is needed on landscape evolution and site formation processes during the Holocene.*
- 8. At this time, more research is not warranted on Hereford's base-level hypothesis; alternative hypotheses and models need to be investigated.*
- 9. Decisions and actions to preserve or recover important data should not wait for results of geomorphologic research.*
- 10. Any study of erosion rates will need to be closely tied to the monitoring program and the way it becomes restructured through the monitoring plan.*

7. Redefine the cultural resource monitoring programs.

Comments by PA Signatories:

- 1. An integrated, interdisciplinary, monitoring plan should be written and included in the HPP.*
- 2. The new monitoring plan will replace the existing MRAP. Until this new monitoring plan is completed, the MRAP and tribal monitoring plans should be updated.*
- 3. The new monitoring plan should be reoriented to: 1) prioritize properties for treatment; 2) evaluate effectiveness of treatments; 3) document progressive erosion where treatment has not yet been implemented but is planned; and 4) ensure visitor effects remain below a threshold that causes long-term damage or loss of integrity.*
- 4. The new monitoring plan should address specific research questions and be guided by a formal research design with stated goals and information needs.*
- 5. The monitoring plan should consider how differing forms of the variables and field data (qualitative, quantitative) can be used to answer questions and meet information and compliance needs of the parties.*
- 6. The monitoring plan should provide for discovery of new properties.*
- 7. The monitoring plan should fully incorporate tribal considerations.*
- 8. Native Americans, geomorphologists or geoarcheologists should be included in the design of all monitoring and fieldwork.*
- 9. The monitoring plan should address kinds of expertise and experience needed to monitor effectively.*
- 10. The monitoring plan should explore the full range of possible methods for quantifying changes to the integrity of the historic properties and for documenting rates of erosion. The plan should investigate a variety of technologies such as LIDAR, total station mapping, repeat mapping, field monitoring with erosion stakes, photogrammetry, etc., to document rates of change and relationships to impact agents.*
- 11. The monitoring plan should fully address the scales and purposes (legal authorities and responsibilities) of future monitoring efforts.*
- 12. The monitoring plan and program should be coordinated and integrated across disciplines, programs, agencies, and tribes.*
- 13. A baseline condition assessment needs to be prepared for natural resources important to tribes.*
- 14. Long-term monitoring may be the only means to determine overall erosion rates, therefore the monitoring program should be carefully integrated with the geomorphological research and as such may be more effectively managed through the GCMRC rather than under the PA program.*
- 15. Responsibilities for visitor impacts should be resolved.*
- 16. Tribal monitoring for natural resources might be much more appropriately carried out under the GCMRC natural resource programs. This would allow for better integration with other research efforts looking at the same resources, and result in better integration of the tribal information into the overall AMP.*

8. Develop an integrated historic property treatment plan for the PA program.

Comments by PA Signatories:

- 1. A treatment plan should be written in consultation with Native Americans and in consideration of the research design.*
- 2. All treatments should be done with input from senior geomorphologists and Native Americans.*
- 3. Need to determine responsibilities for visitor impacts, and consider implications for determining efficacy of visitor impact treatments.*
- 4. Efficacy of current erosion control measures must be assessed. Only after the assessment is complete should additional treatments be undertaken using current methods.*
- 5. Archeological data recovery should be early in the treatment program if data recovery is a treatment option.*
- 6. The treatment plan should be prepared by a contractor with recognized expertise in such plans. The contract should be nationally advertized.*
- 7. The treatment plan should be phased, with phases based on the systematic evaluation of properties.*
- 8. Site should be divided into management categories for determination of treatments, with a range of treatment decisions.*
- 9. Treatment decisions should be based on the property types devised in the research design.*
- 10. Funding for treatments may vary based on responsibilities, authorities and treatment phase, but legal responsibilities remain the same.*
- 11. Existing threats should be documented and future threats projected.*
- 12. Wilderness considerations must be included in all treatment decisions.*
- 13. Agency and tribal responsibilities, authorities and interests in treatment and monitoring must be determined.*
- 14. Monitoring is not a treatment.*
- 15. Based on the overall research design, site specific treatment plans must be prepared if data recovery is the treatment option.*
- 16. Based on the overall research design, site specific treatment plans should be prepared by the contractor that will be conducting the mitigation or treatment.*

9. Develop a cultural resource database plan.

Comments by PA Signatories:

- 1. A plan or design for a cultural resources relational database should be prepared.*
- 2. The computerized database and the variables within it must be planned and designed for specific purposes in order to meet the needs of the parties.*
- 2. The computerized database should be efficient and relational.*
- 3. The database should be linked or otherwise integrated across disciplinary, tribal and agency lines to include natural resources of interest to tribes and to integrate information into the overall AMP.*
- 4. Integration of the cultural resource database with the rest of the GCMRC databases would further the goals of the AMP and would allow for more creative and innovative analyses to be undertaken. To provide interdisciplinary integration, the database should be centralized at GCMRC.*
- 5. The cultural resource database should be linked to the GIS system.*
- 6. Standard operating procedures or protocols must be prepared covering data security, data sharing, access, confidentiality, quality control, maintenance, updating, etc.*
- 7. The database structure should be designed with full consideration of the forms of the variables, i.e. qualitative, presence-absence, quantitative, text strings, images, etc.*
- 8. An appropriate methodology to incorporate tribal data needs to be carefully designed as long-term monitoring data may necessarily be qualitative.*
- 9. Database planning should be coordinated with the research design preparation.*
- 10. Linkages with AZSITE, the NPS's and other agencies and tribal databases need to be considered.*
- 11. The database needs to be developed to meet the needs of both management queries and to provide support for defined research goals.*
- 12. Likely database queries need to be identified prior to development of the database to ensure the database will meet the needs of the parties.*

10. Expand public outreach and education activities.

Comments by PA Signatories:

1. A public (including tribal) involvement and education plan should be written and included in the HPP.

2. The plan should include provisions for public information creation and dissemination.

3. The plan should include coordinated public outreach.

4. Public outreach should be incorporated into contracts.

5. Tribal outreach should be maintained and improved.

6. Tribal education and outreach should be undertaken directly, or encouraged and supported. Internships might be considered at the GCMRC or universities.

7. Knowledge gained through investigations under the HPP (including archeology, tribal history, tribal values, paleoenvironments and paleoclimates) should be communicated in accessible form (through publication or other means) to as wide a range of interested publics as possible, subject to policies on restriction of sensitive information. This will have specific costs.

8. The public needs to be educated about appropriate on-site behavior (site etiquette).

9. An interest in preserving and protecting in situ resources must be taken into account when publishing and distributing information about their nature and location.

10. Public outreach and education should be components of both the GCMRC and the PA programs.

11. The GCMRC might consider contracting with a public relations firm to identify the best mechanisms for achieving a broad, effective public outreach program.

11. Improve cultural resource contracting procedures.

Comments by PA Signatories:

- 1. Require Native American participation in projects.*
- 2. Write tribal involvement into scopes of work and requests for proposals.*
- 3. Have tribes and other parties review and write scopes of work and requests for proposals.*
- 4. Native American participation and improved involvement needs to be clearly defined in the overall AMP, and separate programs of the PA, GCMRC, etc.*
- 5. There needs to be a means to fund unsolicited proposals or proposals for specific research, although these proposals should still be subject to the same review process as any other proposal.*
- 6. Contracts are efficient to obtain short-term and medium-term labor and expertise.*
- 7. Contracting for long-term expertise, as in long-term monitoring programs, remains a question.*
- 8. Use competition and national advertising to get the best product or service for the government.*
- 9. In general, sole source contracts or set-asides are not recommended.*
- 10. Outside peer reviewers should review all contract proposals.*
- 11. The parties, as well as other AMP programs, would benefit from training on government procurement regulations and procedures.*
- 12. Those providing input to scopes of work and requests for proposals or bids cannot bid on the projects, it would create a conflict of interest.*
- 13. Conflicts of interest must be avoided.*

ATTACHMENT 3

MEMO FROM BOR TO PA SIGNATORIES ON PEP

AUG 18 2000

UC-725
ENV-3.00

Memorandum

To: Jan Balsom and Lisa Leap, Grand Canyon National Park
Mary Barger, Western Area Power Administration
Robert Begay, Navajo Nation
Kurt Dongoske and Mike Yeats, Hopi Tribe
Brenda Drye, Southern Paiute Consortium
Chris Goetze, Glen Canyon National Recreation Area
Ann Howard, Arizona SHPO
Loretta Jackson, Hualapai Tribe
Suzette Homer, Pueblo of Zuni
Ruth Lambert, GCMRC
Marjorie Nowick and Jane Crisler, Advisory Council

From: Nancy Coulam, Reclamation, Upper Colorado Region

Subject: Review of Draft Results of July 18-19, 2000 Meeting of the Programmatic Agreement on Cultural Resources Regarding Operation of Glen Canyon Dam and Final Protocol Evaluation Panel Report and Draft Agenda for Meeting on August

Signatories of the Programmatic Agreement on Cultural Resources Regarding Operation of Glen Canyon Dam (PA) and members of the Grand Canyon Monitoring and Research Center met in Flagstaff, AZ on July 18-19, 2000 to consult on the final report of Protocol Evaluation Panel for Cultural Resources (PEP). By consensus, the PA signatories agreed to adopt and implement the three core recommendations and the eight supporting recommendations of the PEP. The 11 approved recommendations are as follows:

Cultural Resources PEP Recommendations Approved by PA Signatories

1. Complete and adopt a Historic Preservation Plan (HPP) as a top priority.
2. Expand Native American involvement at multiple levels.
3. Improve coordination and integration of a complex program.
4. Refine the definition of the area of potential effects (APE) for the PA program.

5. Prepare a systematic evaluation of historic properties for the PA program.
6. Reassess geomorphology research priorities.
7. Redefine the cultural resource monitoring programs.
8. Develop an integrated historic property treatment plan for the PA program.
9. Develop a cultural resource database plan.
10. Expand public outreach and education activities.
11. Improve cultural resource contracting procedures.

At the meeting, the assumptions behind each of the 11 recommendations were discussed to ensure there was common understanding of each recommendation. In addition, where there were concerns or issues with the recommendation these were discussed, and where there was consensus on the concern, this consensus was added to the list of agreed-upon elements of each recommendation. In addition, letters were received from the Hopi Tribe and the Advisory Council on Historic Preservation which expressed their support or concerns with the 11 recommendations. These were presented at the meeting and where there appeared to be consensus in the letters with what was discussed at the meeting, the contents of the letter are incorporated in the following draft report.

Please review the attached report. If I have made an error in interpreting what was agreed upon at the meeting or if you have other concerns, please let me know by phone (801)-524-3684 or by mail. In addition, as you review this report, please consider which of the recommendations or concerns need to be implemented or addressed in what order.

Since Reclamation's top priority is completing the Historic Preservation Plan, I have taken the liberty of attaching a rough draft scope of work to implement the HPP recommendation. I hope that you will review this, and either prepare similar scopes of work for the other recommendations, or at least identify a schedule of which recommendations need to be implemented by which agency, under what authority, and by what date. I will be happy to correct any errors or if we need to reconsult on any specific item or recommendation, please let me know by August 25, 2000 so that I may revise the paperwork before the next meeting.

The next meeting of the PA signatories and GCMRC Socio-cultural staff is scheduled at the GCMRC, in Flagstaff, AZ on August 24, 2000. The meeting will begin at 9:00 a.m. and is expected to last until 5:00 p.m. The purpose of the meeting is to consult on any recommendations that need additional consultation, and to agree upon which recommendations need to be implemented in what order during FY2001 and FY2002. Once these scheduling and prioritizing decisions are made, they will be incorporated in a final report and forwarded to the Technical Work Group for their consideration.

Again, please review the attached document and provide comments either in writing or over the telephone to me at (801)-524-3684. Thank you for taking the time to review this document and participate in the implementation of the recommendations of the PEP.

*Grand Canyon Programmatic Agreement Signatories Cultural Resources Protocol
Evaluation Panel Recommendation Review and Draft Action Plan, First Draft, August 2,
2000*

1. Complete and adopt a Historic Preservation Plan (HPP) as a top priority.

Agreement:

- *The HPP shall be a short, guiding document that provides a process to resolve cultural resource management problems.
- *The HPP needs to be a flexible plan, adaptable to changing circumstances.
- *The HPP shall provide for integration of differing agency and tribal compliance responsibilities and authorities including, but not limited to NHPA Section 106 and 110 compliance, and the Grand Canyon Protection Act.
- *The plan must provide for integration of tribes, especially recognition of tribal lands and tribal interests, along with THPO status for Navajo and Hualapai.
- *The HPP shall include more than just Reclamation's Section 106 responsibilities for operation of Glen Canyon Dam.
- *The HPP shall provide for interdisciplinary integration.
- *The HPP shall explicitly define relationships of the consulting parties. The role of consultation and the consulting parties shall be defined.
- *The HPP shall be a framework that includes or references subsidiary documents or plans. Some of these subsidiary documents or plans must be completed before the HPP itself, therefore, a schedule or process flowchart is needed.
- *A process for decision-making and dispute resolution must be included in the HPP.

Proposed Action Steps:

1. BOR will ensure the HPP is developed in consultation with the PA signatories, and Adaptive Management Program (AMP) stakeholders by consulting with the PA signatories and GCMRC on the draft scope of work.
2. Work on the HPP will be advertised in the Commerce Business Daily, following the Federal Acquisition Regulation (FAR). Contract will be awarded in FY2001 as Reclamation's top priority for funding.
3. All PA signatories and GCMRC will prepare written statements of their differing authorities (laws, regulations, policies) and responsibilities as they relate to the area of potential effects of dam operations. Written statements of authorities, responsibilities within the Area of Potential Effects (APE) will be provided to the contractor. (Some of these statements are already in the draft HPP and merely need updating.)
4. The GCMRC needs to determine whether they will become a signatory to the PA. This decision needs to be made before the final statement on authorities and responsibilities are given to the contractor.
5. When the contractor has the HPP in draft form, BOR will provide copies to all PA signatories and any interested members of the AMP for comment. Disagreements or questions about the draft HPP will be resolved through consultation. Where

agreement cannot be reached, BOR will make the final decision over its compliance responsibilities, other agencies and tribes will make the final decisions over their respective areas of authority and responsibility. If agreement cannot be reached, the dispute will be forwarded to the AMWG for resolution.

6. HPP is expected to be a five-year plan.

Rough Draft Scope of Work for Historic Preservation Plan (HPP) for the Resolution of Effects of Operation of Glen Canyon Dam on Downstream Properties

Proposed HPP guidelines:

1. The Historic Preservation Plan (HPP) will cover management of historic properties within the area of potential effects of Glen Canyon Dam operations. It will be supported by subsidiary plans that detail how the legal requirements for cultural resource management will be met by the different agencies and tribes.
2. The HPP shall be prepared by or under the direct supervision of an individual who meets, at a minimum, the *Secretary of the Interior's Professional Qualifications Standards* for one or more of the cultural resource professions [48 FR 44738-9]. In addition, the individual will have demonstrated experience completing HPPs, or Historic Properties Management Plans, Historic Resources Management Plans, Cultural Resource Management Plans, and having them accepted by agencies, tribes, SHPO/THPOs, the Council and the public.
3. The HPP shall be prepared with reference to the *Secretary of the Interior's Standards and Guidelines for Preservation Planning* [48 FR 44716-20]; the Section 110 Guidelines [53 FR 4727-46]; 36 CFR 800; Arizona SHPO or Navajo and Hualapai THPO standards and guidelines; and other documents provided by the PA signatories.
4. The HPP shall be prepared in consultation with the PA signatories and the members of the Adaptive Management Program (AMP) for operation of Glen Canyon Dam.
5. The HPP will establish processes for resolution of potential effects of BOR's operation of Glen Canyon Dam on downstream historic properties (i.e. to fulfill BOR's Section 106 compliance responsibilities) with the geographically overlapping responsibilities and concerns of other agencies and tribes. The PA signatories will identify their differing authorities and responsibilities, and will describe what their boundaries and limitations are, including limits on time and money.
6. Geographic Information Systems (GIS) and a centralized, georeferenced database shall be a means of integrating the HPP and its supporting documents. The Hopi Tribe has recommended a guidance integration document be included as part of the HPP. Possibilities of using a process flowchart should be explored.
7. All maps, graphics, and underlying data shall be made consistent with the GIS of the GCMRC, since this is the primary depository of information resulting from investigations into the effects of dam operation on other downstream resources.

Copies or linkages will be provided to others, as appropriate and as articulated in a database plan.

8. Following the *Secretary of the Interior's Standards for Archeological Documentation* [48 FR 44716-20], the methods and techniques recommended in the HPP should be the most effective, least destructive, most efficient and economical means of obtaining the needed information or results.
9. Results (and actions) of the HPP will be integrated into the broader AMP and disseminated to various public and professional audiences, as appropriate.

The HPP will include (at a minimum) the following sections:

1. Background. The purpose, scope, boundaries and limits of the HPP will be defined. This can be taken largely from the existing draft HPP, but it needs to identify the differing authorities and responsibilities of each PA signatory. The Area of Potential Effects (APE) shall be defined. The magnitude of the improvements that can be expected to occur as a result of implementing the plan shall be identified.
2. Introduction. The introduction shall explain the organization and use of the various sections of the HPP. Some of the sections may be references to plans that are not yet completed.
3. A flowchart to map the steps in the HPP process. (Note: Consideration should be given to use of a deployment flowchart. A deployment flowchart shows both the detailed steps in a process and which people are involved in each step. This type of flowchart is useful in processes with handoffs, where information or material is passed back and forth among different people.)
4. Systematic evaluation of historic properties on a site-by-site basis based upon a research design and incorporation of tribal values.
5. Monitoring Plan.
6. Possibly a Treatment Plan.
7. Database and Curation Plan.
10. Public Outreach Plan.
11. The HPP itself, plus subsidiary plans, will identify the resources needed to successfully resolve effects of dam operations and other impacts (e.g. visitors). Resources include training, budget, equipment, expertise from in-house or external specialists, time and schedules, including target dates for completion, etc.

2. Expand Native American involvement at multiple levels.

Agreement:

- *Write a Native American Consultation Plan. This consultation plan identify a process for improving tribal involvement in the PA program, GCMRC programs and the AMP in general.
- *Tribes should evaluate potential utility of Memorandums of Understanding (MOU) regarding consultation and involvement in the HPP and in the broader Adaptive Management Program (AMP).
- *Consultation occurs at meetings, but also needs to take place in a less confrontational environment.
- *Tribes want to be involved early in planning processes, not just in reviewing finished documents or plans. Tribes want meaningful involvement.
- *Agencies should accept the Grand Canyon as a traditional cultural property eligible for the National Register of Historic Places and proceed with a consensus determination of eligibility.
- *The GCMRC should establish a Cultural Resources Task Group at GCMRC, emphasizing tribal involvement.
- *Investigate the feasibility of establishing Native American internship programs through university programs or directly at the GCMRC.

Proposed Actions:

1. Identify Current Situation. Review existing documents such as cooperative agreements, MOUs, GCMRC plans, to understand why tribes do not feel integrated into the AMP. Write a clear statement of intended improvements in tribal involvement, and how improvement is to be measured.
2. Solutions to Situation. A series of solutions to the lack of involvement should be developed, tried, tested, and implemented. Suggestions follow:
 - *Establish one contact point for communication between tribes and the GCMRC.
 - *Form a Cultural Resources Task Group at GCMRC that holds regularly scheduled meeting, possibly quarterly. If the Task Group is formed, processes must be established for multidisciplinary involvement.
 - *Identify what training and skills Native Americans might need to more fully participate in the AMP and PA. Once needs are identified, consider the possibility of providing the necessary training through internships for Native Americans, whether using university programs or through on-the-job training at GCMRC or with agencies.
 - *Attempt to reach a consensus determination of eligibility for canyon as TCP, this would help identify and define areas of tribal interest. If no consensus is reached by the end of FY2000, proceed with the National Register evaluation process.
 - *Have tribes take lead in preparing a consultation plan.
 - *Have tribes participate in the formulation of the HPP and subsidiary documents, especially in preparing scopes of work and requests for proposals.
 - *Tribes need to explore the utility of consultation and involvement MOUs.
 - *Tribes and agencies need to consider the broader issues of AMP interaction with tribes. For example, should MOUs be written for the AMP or AMWG? Since the

AMWG includes non-governmental organizations, states, etc., are AMP MOUs desirable and useful?

If tribes agree that it is an effective solution, a Consultation Plan should be written that might include the following:

- *Review of the current involvement situation (especially existing agreements), identification of the existing causes for lack of involvement (confirmation of the causes with data), and recommendations for solutions and improvement.
- *Written processes by which the parties agree on how to communicate, resolve differences, make decisions, identify what is important, acknowledge roles and responsibilities, and maintain government-to-government relationships.
- *A clear statement of the desired improvement in tribal involvement, and how that improvement is to be measured.
- *Identification of what is important to the different tribes with respect to tribal boundaries and tribal interests. This section of the plan will include an acknowledgement that tribal interests are broader than cultural resources and include water quality, recreation, plants, and animals, etc.
- *If determined necessary and desirable, MOUs.
- *The plan needs to address how tribes can be better integrated into AMP ecosystem management. The first step in improving integration might be identification of similarities and differences between tribal approaches to ecosystem management and scientific approaches of the GCMRC. (Note: it is anticipated that differences might lie in the differing emphasis on using data vs. experience to guide decision-making. Tribes might solve problems based on their knowledge, experience, insight, or intuition. Science cannot replace this experience or knowledge, but past experience and knowledge are not always enough to provide efficient solutions to new problems. A process is needed to incorporate both so that time, energy and resources are used more effectively.)
- *Policy on the dissemination of confidential information, incorporating legal issues of copyright, intellectual property, and the Federal government regulations on data dissemination and the public domain.
- *Provisions for increased sharing of information and responsibilities between Native American monitoring programs and other monitoring activities of the AMP and PA.

3. Improve coordination and integration of a complex program.

Agreement:

- *All parties need to identify their responsibilities, authorities, and interests and include this in the HPP.
- *GCMRC and PA programs need to be integrated and communication needs to improve, especially across disciplinary lines and between agencies and tribes.
- *Projects and plans need to be adequately staffed and funded.
- *Cultural resource monitoring needs to be integrated with other AMP monitoring programs where appropriate.
- *A new position of senior cultural resource manager is not accepted. If the HPP provides sufficient clarification of responsibilities and provides a framework for integration, this position should not be necessary.

Proposed Actions:

The PEP suggested a variety of solutions to improve integration. These are as follows:

- *BOR will increase its personnel allocation to the PA program during FY2001 and FY2002 while the key planning documents (HPP, treatment plan, etc.) are being written. After these documents are completed, BOR's staffing requirements should decrease.
- *GCMRC will maintain its full-time person heading the Socio-cultural Program to provide a single point of contact and improve efficiency of communication.
- *GCMRC shall improve integration across disciplines by allocating time for its geomorphologists, biologists, database and information management personnel to work with tribes and cultural resources personnel.
- *The HPP should identify needed expertise and experience for success.
- *A senior, highly-qualified geomorphologist should be included as a regular and active member of cultural resource work, especially in the development of the HPP and other plans. GCMRC will explore workloads and availability of its geomorphologist; indefinite quantity contracts will be explored if needed.
- *Training needs for Native Americans should be identified. A solution might be internship programs.
- *GIS and a fully relational database (i.e. ORACLE) centralized at GCMRC will be utilized to provide integration across disciplines and programs of the AMP.
- *Natural resource monitoring of the tribes shall be integrated through the terrestrial or other monitoring programs of the GCMRC; areas of resource concern will be georeferenced (if possible).

4. Refine the definition of the Area of Potential Effects (APE).

Recommended Definition: The APE is defined as the full extent of mainstem Colorado River Holocene sediments along the river corridor. This includes alluvium, interfingering or overlying hillslope and debris fan deposits, and genetically related aeolian deposits. It consists of: a) Colorado River alluvium arranged as a flight of inset terraces and underlying fill deposits; b) aeolian deposits that originate by deflation of Colorado River alluvium that is transported and emplaced elsewhere in the river corridor; and c) fluvial and debris flow deposits of tributary debris fans as well as colluvium that interfingers and buries other Holocene deposits along the river corridor.

Agreement:

- *The APE makes sense for research and for inclusion in the research design.
- *The APE should be adopted only after the concerns listed below are addressed.

Proposed Actions:

- *Authorities, responsibilities and interest of all parties need to be identified and georeferenced within the APE.
- *The Advisory Council should comment on whether the proposed APE definition meets their regulatory definition.
- *Geomorphologists need to provide cost and time estimates for 1) mapping flow-based definitions of APE, 2) mapping Holocene sediments, 3) obtaining a probabilistic model of direct and indirect effects of dam operations.
- *Probabilities of direct or indirect effect of dam operations, visitors, or natural processes must be modeled and mapped.

5. Prepare a systematic evaluation historic properties for the PA program.

Agreement:

- *A systematic evaluation of the relative values of the historic properties and the site-specific contributing elements of the traditional cultural landscape will be prepared.
- *Since the majority of sites were originally determined eligible to the National Register under Criterion D for their ability to contribute important information in prehistory, a research design should be prepared that formulates questions important in history (including tribal history), regional archeology, geoarcheology, geomorphology, and paleoclimatology. By formulating the research questions that need to be answered, it will be possible to identify data.
- *The research design should be contracted, using national-level procurement processes, with the PA signatories as the technical panel evaluation committee.
- *A site-by-site condition assessment and a reevaluation of National Register eligibility should be prepared. All categories of sites and site-specific elements of the cultural landscape need to be included.
- *The condition assessment should be included in the database and used in preparing the treatment plan.
- *Tribes should be involved in eligibility evaluation, research design formulation, and implementation of the research design and treatment plan.
- *Previously collected samples should be processed and reports prepared on the results.
- *Significance of the canyon as a traditional cultural property is best considered as a whole.

Proposed Action Steps:

1. Results of prior salvage operations must be written and reported. The research design contractor could help determine which samples to process to complete the research design.
2. The determination of eligibility of the canyon as a TCP needs to be completed, and site-specific elements of the cultural landscape need to be identified and evaluated for National Register eligibility.
3. Contract for the preparation of a research design that can be used to evaluate the information values of sites and site-specific elements of the cultural landscape. The research design should include:
 - *A regional approach to research questions and properties.
 - *Multiple working hypotheses.
 - *Site specific data.
 - *Tribal viewpoints, concerns or questions, along with explicitly formulated postulates derived from ethnographic analogy.
 - *Geoarcheological, geomorphological and paleoclimatic research questions.
 - *Questions about site formation and preservation processes.
 - *Justification for the kinds of data to be collected through future data recovery.
4. Property types based on the research design will need to be defined.
5. Each site and site-specific element of the cultural landscape will be reevaluated for National Register eligibility by property type, relative ability to convey its historic significance, and loss of integrity (condition assessment).

6. A probabilistic model will be developed to predict future loss of the essential physical features per site.

6. Reassess geomorphology research priorities.

Agreement:

- *Geomorphology and geoarcheological research is needed to define impact, to determine effective treatment strategies, to improve integration.
- *Geomorphologists, paleoclimatologists, or geoarcheologists should work with cultural resource personnel in formulating research designs and questions, and in planning and conducting field treatments.
- *Geomorphological research should address the "erosion question," i.e., locate where erosion may be attributed to dam operations or to natural processes.
- *Research in geomorphology should focus on answering general, archeologically important questions.
- *Geomorphological research needs to evaluate existing stabilization efforts and make recommendations about other possible treatments.
- *There is a need for fundamental, process-based geomorphological research on landscape evolution and site formation processes during the Holocene.
- *More research is not warranted on Hereford's base-level hypothesis at this time.
- *Alternative hypotheses (to Hereford) need to be investigated.
- *Decisions and actions to preserve or recover data should not wait for results of geomorphological research.

Proposed Action Steps:

1. A senior geomorphologist should work with cultural resource personnel on all projects. Scopes of work in cultural resources should be drafted with the assistance of a senior geomorphologist, reviewed across disciplines, and the availability of work should be better advertised.
2. Geomorphological research is needed to understand the cultural record and effects of dam operations. The most fundamental need is for development of a more in-depth and process-based conceptual framework for: (a) processes of terrace evolution and erosion, and thus erosion of cultural sites; (b) the relative importance of fluvial, aeolian, and colluvial deposition within individual terrace units; and (c) deposition of older Holocene deposits by the Colorado River, considering that the fluvial system that deposited the "ap" and "sa" units may have been fundamentally different than the modern river system.
3. The archeological research design should incorporate geomorphological and geoarcheological issues, including fundamental process-based research on the record of landscape evolution during the Holocene, as well as site formation and preservation processes.
4. The "erosion question" should be resolved by further research, including monitoring of erosion rates and processes, and preparing a predictive model of the vulnerability of sites and terraces.
5. Research should include multiple working hypotheses. Instead research should focus on the more general and archaeologically important questions of, "what is causing erosion," "what is causing this increase in erosion" and "is the rate of increase unprecedented in the recent geological record?" The answer to these questions have

been provided in part answered by the program's research to date, and a complete answer may be important for full development of a predictive equation for the susceptibility of sites to erosion—something that may be important for its utility outside Grand Canyon as well.

6. Geomorphologists should evaluate the effectiveness of current stabilization efforts and research potential erosion control or stabilization measures. Additional strategies and technologies might be compatible with the site preservation goals. This could include not only other types of gully and arroyo stabilization, but also other forms of compatible materials and techniques. Wilderness issues and tribal desires for no treatment must be considered.

7. Redefine the cultural resource monitoring programs.

Agreement:

- *An integrated, multidisciplinary, monitoring plan should be written and included in the HPP. The plan will replace the MRAP.

- *Monitoring needs to be guided by a specific research design or designs, with stated goals and information needs based on responsibilities and authorities.

- *Monitoring should be reoriented to contribute information to 1) prioritize properties for treatment; 2) to evaluate the effectiveness of treatments; 3) to document progressive erosion where treatment has not yet been implemented; and 4) to ensure visitor effects remain below a threshold that causes long-term damage.

- *A baseline condition assessment needs to be prepared for natural resources important to tribes. (Note: This is one of the areas where integration may be improved between experiential perspectives of the tribes and scientific data collection strategies of the GCMRC.)

- *The monitoring plan needs to identify how differing forms of the variables and field data, i.e., qualitative, quantitative, can be used to answer questions and meet information needs.

- *A range of technologies should be explored to determine how to measure change from baseline.

- *The plan should explore the full range of possible methods for quantifying changes to the integrity of the historic properties and for documenting rates of erosion. The plan should investigate total station mapping, repeat mapping, field monitoring with erosion stakes, photogrammetry, etc. to document rates of change and relationships to impact agents.

- *Native Americans, geomorphologists or geoarcheologists should be included in the design of monitoring and in field work. Kinds of expertise and experience needed to monitor effectively should be addressed in the plan.

Proposed Actions:

- *Existing monitoring programs and data need to be reviewed and, where they provide useful information, integrated into an integrated monitoring plan.

- *The integrated monitoring plan needs to be prepared, with the first step the identification of information needs, research or management questions or problems based on specific authorities and responsibilities (i.e. GCPA, NHPA, ESA, etc.). (Note: it is anticipated that the main questions will revolve around detecting or measuring change from baseline. The baselines must be identified.)

- *Data must be identified that will serve to answer specific information needs or questions, with consideration given to the form of the variables (qualitative, presence-absence, ranked, quantitative). In addition, consideration must be given to the techniques for analysis, interpretation, and presentation of results.

- *A pilot study might be useful to ensure that data collected will be meaningful and appropriate to AMP, as well as HPP needs. Try out the processes and procedures before they become fully implemented to ensure efficacy and utility. Make changes as necessary.

*Geomorphological research on physical processes occurring within site boundaries (and on terraces) is needed for the monitoring plan. For example, rates of erosion on individual gullies might need to be measured to predict loss of archeological data over a span of time.

*Services of a senior geomorphologist or geoarcheologist should be obtained for working on the research design, developing the database, the monitoring plan, the treatment plan, etc. Geomorphologists should accompany all archeological monitoring trips to improve understanding of physical impacts and resource degradation and loss.

*Monitoring programs should be integrated using GIS.

8. Develop an integrated historic property treatment plan for the PA program.

Agreement:

- *An integrated, multiphase treatment plan must be prepared that incorporates Native American views, research issues based on the research design, wilderness management constraints, etc.
- *Treatment phases should be based on site priority, re-evaluation of the research design, determination of agency and tribal authorities and responsibilities for impacts, etc.
- *Funding will differ depending on the treatment phase and legal responsibilities.
- *Treatment decisions should be based on the current condition assessment and a projection or prediction of future threats or impacts.
- *Need to assess visitor impacts.
- *The effectiveness of current stabilization efforts must be evaluated, and any future stabilization work must have input from a senior geomorphologist.
- *Data recovery is recommended early in the treatment program.
- *The treatment plan should be nationally competed.
- *Sites and site-specific elements of the cultural landscape must be classified by management categories for determination of treatment. A wide range of treatment options should be explored, from no treatment (no action), through full data recovery.

Proposed Actions:

- *Efficacy of current stabilization work needs to be assessed by a senior geomorphologist and geoarcheologist before the treatment plan is written.
- *The treatment plan can be prepared only after the research design is completed, the systematic evaluation of sites is completed, and future impacts (or loss of integrity) are predicted, and the condition assessment is in the database. However, treatment decisions should not wait for the finalization of the geomorphological research (depending on the time frames to complete such research).
- *Based on the condition assessment and the prediction of future impacts, the PA signatories must be consulted on where and when any treatment should be conducted. Based on current consultation with tribes and the acknowledgment of the importance of the canyon as a traditional cultural property, it is expected that in most cases the decision will be to conduct no treatment except for experimental flows of the river.
- *After consultation, and if there is agreement on the need to intervene in the sites or landscape, the treatment plan will be prepared.
- *The treatment plan will divide sites into management categories and a sampling design will be included. For example, the PEP recommended categories of no treatment except existing documentation; monitor to document change; implement visitor management program; implement stabilization treatments; implement data recovery program with high and secondary priority sites.
- *After high priority data recovery sites are treated; and after stabilization is implemented; the treatment plan will be reevaluated and updated.

9. Develop a cultural resource database plan.

Agreement:

- *A plan or design for a relational database should be prepared.
- *The plan should include:
 - *Full consideration of efficient relational database structures (hardware and software design).
 - *Integration and links with other databases of the AMP, i.e. physical resources, biological resources, remote sensing, etc.
 - *Standard operating procedures or protocols for data security, data sharing, access.
 - *Standard operating procedures for quality control and provisions for updating.
 - *Consideration of digital image processing (or otherwise address existing photographs).
 - *Site-based information and evaluations.
 - *Site-specific elements of the cultural landscape and evaluations.
 - *Condition assessment of sites.
 - *Prediction of effects per site.
 - *Ranked values of sites.
 - *Consideration of forms of data or variables, i.e. qualitative, presence-absence, quantitative, etc. (What will be measured and how?)
 - *Coordination with other databases, i.e., AZSITE, ASMIS (NPS database), tribal databases.

Proposed Actions:

- *As a first step, there must be an identification of information needs, or management and research questions, and an identification of the data needed to address or answer these needs.
- *Once "data" are identified, existing "data" from NPS and Tribes need to be examined by an experienced database designer. The designer needs to make recommendations for improved data structures and relate these recommendations back to the HPP and subsidiary plan writers.
- *GIS will be used to provide multidisciplinary integration. Since the GIS system is GCMRC's (with linkages to others), the database should be maintained at GCMRC.
- *Necessary links (i.e. to NPS and tribes) must be identified and incorporated into the database design structure.
- *The database will need to include the site-based condition assessment, the evaluations and rankings of site values, predictions of effect, etc.

8. Expand public outreach and education activities.

Agreement:

- *Tribal outreach and education programs should be maintained.
- *Contracts should have provisions for public outreach.
- *The public needs to know what has been and will be learned about cultural resources, what values the resource have (including tribal values).
- *The public needs to be educated about appropriate on-site behavior (site etiquette).
- *Public information should be developed to familiarize the public with what has been and will be learned about paleoenvironments and paleoclimates.
- *A public (and tribal) involvement plan should be written and included in the HPP. The public involvement plan should include:
 - *Provisions for information creation and dissemination to public audiences.
 - *Public outreach procedures.
 - *Policy on restriction of certain sensitive information.

11. Improve cultural resource contracting procedures.

Agreement:

- *Require Native American participation in projects by writing involvement into scopes of work and requests for proposals.
- *Native American participation needs to be clearly defined.
- *Contract for short-term and medium-term labor and expertise.
- *Use competition and national advertising to get best product or service.
- *In general, sole source contracts or set-asides are not recommended.
- *All contract proposals should be reviewed by an outside panel of peer reviewers.

Concerns:

- *What about long-term monitoring?
- *PA group, as well as other AMP programs, need training on government procurement regulations and procedures.

ATTACHMENT 4

NANCY COULAM'S POWER POINT PRESENTATION TO TWG

Reclamation's PA Work Plan, FY01-03

9/17/2001

Vision Statement

Adopt protocol evaluation panel (PEP) recommendations to achieve compliance with National Historic Preservation Act (PA) and Grand Canyon Protection Act.

9/17/2001

Goal: Complete Stipulations in Programmatic Agreement.

1. Identification and evaluation of properties within area of potential effects.
2. Monitor to determine operational effects and mitigation of effects.
3. Long-term management through an historic preservation plan (HPP).

9/17/2001

1. Finish Historic Preservation Plan (HPP).

Plan includes:

- A. Research design (FY01 \$130,000)
- B. Consultation plan (FY01 \$9,000)
- C. Database plan (FY01-02 \$77,500)
- D. Introduction (FY02 \$40,000)
- E. Monitoring plan (FY02 \$37,500)
- F. Treatment plan (FY03 \$200,000)
- G. Public involvement plan (FY03 \$30,000)
- H. Curation, NAGPRA plan (FY03 \$25,000)

9/17/2001

2. Expand Native American Involvement.

- A. Tribes write consultation plan (FY01 \$9,000).
- B. Define tribal interests, trust assets.
- C. Define agency and AMP authorities, responsibilities.
- D. Involve tribes early in planning programs and projects.
- E. Determine eligibility of traditional cultural properties.

9/17/2001

3. Improve Coordination and Integration & 11. Contracting Procedures.

Reclamation program administration (FY01-03 \$80,000/year, declining over time.)

Send Reclamation's staff to Federal Acquisitions Regulation training (\$500-1000.)

9/17/2001

4. Refine Definition of Area of Potential Effects & 6. Reassess Geomorphologic Research Priorities.

Can effects of dam operation be separated from existence or natural processes? (FY01, \$40,000)

If yes, then research project (FY02-03 ca. \$130,000-150,000/year)

If no, then make decision about effects.

9/17/2001

5. Systematically Evaluate Historic Properties.

Complete tribal value study (FY01 \$30,000).

Contract for research design (FY01 \$130,000) (\$55,000 Reclamation + \$75,000 GCMRC).

Incorporate property-by-property assessment.

9/17/2001

7. Redefine Cultural Resources Monitoring Programs.

Update current protocols and continue monitoring (FY01-02 \$221,000 GRCA + \$27,500 GLCA/year).

Update tribal protocols via GCMRC Terrestrial Program (FY01 \$15,000 Paiute + \$15,000 Hualapai/year + GCMRC \$).

Contract for monitoring plan (FY02 \$37,500; \$12,500 Reclamation + \$25,000 GCMRC).

New monitoring programs (FY03).

8. Develop Integrated Treatment Plan.

Contract for treatment plan (FY03 \$200,000).

New treatment programs in place (FY04).

9/17/2001

9. Prepare Cultural Resources Database Plan.

FY01 Plan (\$40,000) includes:

- A. Identify data and variables.
- B. Provide copies to statistician.
- C. Formulate queries.
- D. Design Access structure.
- E. Import data and provide to GCMRC.

9/17/2001

9. Database Plan Continued.

FY02 Plan (\$37,500) includes:

- A. Design Oracle database.
- B. Import Access database to Oracle.
- C. Train users.

9/17/2001

10. Expand Public Outreach and Education Activities.

A. Develop plan (FY03 \$30,000; \$20,000 Reclamation + \$10,000).

9/17/2001

ATTACHMENT 5

RUTH LAMBERT'S MEMO TO BARRY GOLD ON PEP

MEMORANDUM**TO:** Barry Gold**FROM:** Ruth Lambert**SUBJECT:** Cultural Resource PEP Recommendations**DATE:** September 14, 2001

The Cultural Resource Protocol Evaluation Panel (PEP) was convened in March 2000 and issued their final report in June 2000 making three core recommendations and eight supporting recommendations. The report recommendations and my comments on each recommendation are listed below. In addition, a cultural resource/ PA meeting was held on July 18 and 19th, 2000, at GCMRC to discuss these recommendations and to plan cultural work for the next two years. With only minor comments, these recommendations were endorsed by this group and project planning and scheduling was done.

CORE RECOMMENDATIONSRecommendation #1:

Complete and adopt a Historic Preservation Plan (HPP). The plan should include the following components: research design, monitoring plan, traditional cultural properties plan, historic properties treatment plan, public involvement plan, Native American consultation plan, and a cultural resources database plan. The PEP also recommended that an outside consultant be hired to draft the HPP and that it be developed in close consultation with BOR, NPS, and tribes and that GCMRC should participate in the process. They recommended contracting out the research design component and that progress should be simultaneous on the master document and subsidiary documents.

Comments: The HPP represents a requirement of the PA program and it provides guidance for the GCMRC in proposing and structuring our cultural projects and long-term monitoring and research efforts. Every effort should be made to expedite the HPP process and support this recommendation. At the present time, the following efforts are being made to complete the HPP components:

Research Design- Co-funded by BOR/GCMRC. Contract awarded by GCMRC in September 2001. Completion December 2002.

Tribal Values Study (component of research design) – Funded by BOR, initiated in FY 2001 with the Hopi Tribe. Completion December 2002.

Traditional Cultural Properties Plan – Initiated by the BOR in FY 2001 with the submission of Determinations of Eligibility for the Grand Canyon as a TCP in conjunction with Research Design. Completed FY 2002.

Monitoring Plan – Co-funded by BOR/GCMRC. To be awarded in FY 2002. Completion FY 2003.

Native American Consultation Plan – Funded by BOR. Initiated in FY 2001 with the Hualapai Tribe. Completion FY 2002.

Historic Properties Treatment Plan - Funded by BOR scheduled for FY 2003. Completion FY 2004.

Cultural Resources Database Plan – Co-funded by BOR/GCMRC. To be awarded in FY 2002. Completion FY 2003.

Public Involvement Plan – Proposed for funding in FY 2003. Completion FY 2004.

Recommendation# 2:

Expand Native American Involvement. The PEP recommended the following ways to increase Native American involvement: 1) Prepare Memoranda of Understanding (MOUs) with each participating tribe to address trust issues and participation; 2) Prepare a Native American Consultation Plan to establish process for communicating, coordinating, resolving differences, defining roles and responsibilities and establishing government to government relationships; 3) HPP should include procedures for more direct involvement of Native Americans; 4) All involved agencies should accept the designation of the entire canyon as a TCP; 5) Promote integration of tribal monitoring programs with other GCMRC monitoring activities and the PA program and increase face-to-face interaction; 6) GCMRC should host informational meetings to convey project information and obtain tribal feedback. This should be in addition to formal procedures outlined in the tribal consultation plan.

Comments: The involvement of Native American stakeholders is important to the Adaptive Management Program in all resource areas and this recommendation should receive strong support. At the present time, the BOR is preparing a Memorandum Of Agreement (MOA) between the tribes and federal agencies that addresses Trust issues and Tribal participation within the AMP. The MOA is undergoing Tribal review and will be forwarded to the federal agencies for review. In collaboration with the BOR, the Hualapai and Hopi Tribes are writing HPP components. The Hualapai Tribe is currently drafting the Native American Consultation Plan that will provide guidance for tribal consultation within the AMP. The Hopi Tribe is drafting a Tribal Values Study that is a component of the Research Design. This study provides information on the values associated with traditional cultural resources for incorporation into the Research Design. In addition, at the request of the Hopi Tribe, documentation is being prepared (Determinations of Eligibility) of the Canyon as a TCP for review by the Keeper of the National Register in FY 2002. GCMRC has held cultural meetings to discuss projects (cultural resource planning – July 2000, August 2000, December 2000, and terrestrial monitoring- October 2000, August 2001). A schedule for future meetings with GCMRC staff has been drafted. Finally, at the expressed interest of the cultural representatives, a series of workshops on specific topics will be held. Workshop topics include Section 106 review, NEPA review (with emphasis on cultural aspects), using the GCMRC conceptual model, GCMRC technology facilities and services, and proposal writing. Workshops will be conducted in FY 2002, beginning in the Winter.

Recommendation# 3:

Improve Coordination of a Complex Program. The PEP recommends that the 1) BOR, NPS and GCMRC commit to realistic and creative approach that explores the interest of the various parties to see how they can be satisfied in mutually complementary ways; and 2) The Advisory Council and Arizona SHPO need to support the development of creative solutions to the complex issues of this program.

Comments: Coordination within the overall cultural program in the AMP is supported. The PEP report recognizes that the HPP will provide a mechanism to integrate agency concerns and responsibilities once it is completed. In addition, the preparation of the HPP documents by Tribes, and Agencies establishes an integrative framework for collaborative efforts. To provide support for the coordination between programs, all efforts to further the completion of the HPP should be made.

SUPPORTING RECOMMENDATIONS

Recommendation # 1:

Refine the definition of the Area of Potential Effect (APE) for the PA program. The PEP report recommends that the APE be redefined using mainstem Holocene sedimentary deposits along the river corridor. The report suggests that identifying these deposits should provide a more practical definition that can be mapped and be directly related to the presence and condition of cultural resources.

Comments: This recommendation is currently under investigation. The BOR will initiate a workshop to assess available data and determine the feasibility and scale of this effort. GCMRC has committed funding for FY 2002 for the mapping effort, should the initial workshop indicate that this effort will be feasible. Second year funding in FY 2003 (assuming that the project is initiated and is a two year effort) has been requested.

Recommendation # 2:

Prepare a systematic evaluation of historic properties for the PA Program. The report strongly recommends the development of a research design to provide a context in which to evaluate the relative value of the historic properties.

Comments: GCMRC supports this recommendation and is co-funding the development of the research design with the BOR. The Research Design is the fundamental component of the HPP (see core recommendation # 1 above). This effort has been initiated and will be completed by December 2002.

Recommendation # 3:

Reassess geomorphology research priorities. The PEP report recommends that investigations into the geomorphology be more broad-based and that future research should be tied to the overall archaeological/historical research design. They believe that it is not productive to attempt to quantify dam-related effects vs. natural erosional effects as this is not cost-effective.

Comments: Geomorphology investigations in the cultural area should be directly linked to the research design that is being developed. Structuring studies that address these issues should broaden the effort from the previous 'base-level' hypothesis focus. While the panel believes that quantification of dam verses natural processes is not productive, the identification of dam related processes is important. Identifying these processes is important for at least three reasons: a) mitigation measures may be proposed if the relationships between operations and resource effects are understood; b) Tribal groups view the appropriateness of mitigation efforts differently based on the source of the impacts; and c) without special authority, GCMRC funding is limited to studies of dam affects on resources. Therefore, additional investigations into understanding the source of resource impacts should be made under the broad framework of the research design project.

Recommendation # 4:

Redefine the cultural resource monitoring programs. The PEP report recommends that the current monitoring program be reoriented to collect and contribute information to respond to the Research Design and the HPP, to prioritize historic properties for treatment and to evaluate the effectiveness of treatment options such as check dams or restriction of access to sites. They also recommend that cultural monitoring programs be coordinated (such as PA, tribal, and GCMRC) and that a monitoring plan be developed to provide a methodology and approach to accomplish these efforts.

Comments: This recommendation is supported through the GCMRC involvement in the development of the monitoring plan in FY 2002 and the proposed funding to implement the plan in FY 2003. In addition, GCMRC is sponsoring a project that will evaluate the use of remotely sensed data to conduct monitoring and to assess the effectiveness of check dams at selected locations. Integration of monitoring efforts is also supported by GCMRC in the terrestrial monitoring pilot project where Tribal representatives participate in a biological monitoring project to integrate resource information.

Recommendation # 5:

Develop a cultural resource database plan. The PEP recommends the development of a cultural resource database plan as a component of the HPP to integrate data and make it accessible to AMP members.

Comments: This recommendation is supported and has been initiated by the first efforts of the BOR to assess existing data. Committed funding for BOR and GCMRC will be used in FY 2002 to contract for the development of the plan. Workshops will be held with cultural representatives to discuss data quality and type, database format and structure, data sensitivity, data transfer, and data access by AMP representatives and the public. The Plan will be completed in FY 2003.

Recommendation # 6:

Develop an integrated historic properties treatment plan for the PA program. The PEP report recommends the development of the long-term treatment plan utilizing existing monitoring data organized within the framework provided by the research design plan.

Comments: The treatment plan will include mechanisms to identify and prioritize cultural resources for treatment. It is dependent on the development of several HPP components including the Research Design, the Native American Consultation Plan, the Monitoring Plan, and the Traditional Cultural Properties Plan. On-going geomorphological efforts (assessment and mapping of Holocene deposits) and evaluation of check dam treatments as mitigation efforts will provide important information in the development of the plan.

Recommendation# 7:

Expand public outreach and education activities. The PEP report recommends that outreach efforts be expanded at GCMRC and within the PA program. The development of the Public Involvement Plan would provide a mechanism to structure these efforts.

Comments: The GCMRC has supported public outreach efforts and will continue this in FY 2002 and it is proposing to expand these efforts in FY 2003 through the use of funding for tribal interns, workshops, and the development of the Public Involvement Plan.

Recommendation# 8:

Improve cultural resource contracting procedures. The PEP report recommends that the GCMRC and the PA program access additional labor and expertise through the use of contracted services as necessary. They recommend the use of the competitive bidding processes, independent peer reviewers, and that Native American involvement be an appropriate requirement to include within RFPs. Sole-source contracting and special set-asides are not recommended.

Comments: The GCMRC supports this recommendation as it is consistent with existing procedures. GCMRC procedures include the use of external peer reviewers for the GCMRC program, the individual resource areas, and specific projects. In addition, a group of science advisors provide external input on a long-term continuing basis.

From: Dave Swanson
To: Roxlau@ttnus.com; WESTERN@montana.com
Date: 9/21/01 4:03PM
Subject: ND-SD Fiber Optic Project

We just received the splice sites for the Yankon-Gavins Point and Rapid Creek-Elk Creek transmission lines. The splice locations and trenching locations for the Fargo-Maple River Station transmission line were previously sent in jpg files. I'll forward you the email with the splice site information for the other two lines. Please note that there is a segment along Yankon-Gavins Point that will require trenching. We should have the splice sites delineated on quad sheets early next week and will fed-x as soon as they are available. Upon receipt of these maps, you should have all the maps in hand for the work targeted for 2001, i.e., Oahe-Glenham, Oahe-Phillip, and the lines mentioned above.

As you know, Mary Barger has discussed the project with the SD SHPO (I copied here note below for reference). A discussion with the ND SHPO is pending. At this time and particularly for the longer lines, we do not know if the installation contractor will need to upgrade any access roads or where the contractor will place staging areas. Upon contract award, we will ensure that the contractor knows that we may need to do additional surveys. Depending on the timing, we may call upon you to do the surveys, conduct the surveys using in-house archaeologists, or use other contracts. However, there is a need to do the surveys of the splice sites, the trenching areas, and the regeneration site on the Oahe-Phillip line (structure 50/5; I still owe you the legal description) before the onset of winter weather. Also, we may need to have you survey a bit larger area around right-angle turning structures, as it may be necessary to pull and tension outside of the 400 by 100 foot area. I'll check and let you know. Assuming we get you the balance of the maps next week, could you give an estimate of when the survey work will commence? It is important for us to know if there are any eligible cultural sites in the areas picked for the splices. Thank you. Let me know if you need any additional information. Dave Swanson

Barger's 9/14/01 email:

Steve,

As we just discussed, Western plans to replace the ground wire with fiber optics on the following existing transmission lines:

Bismarck-Glenham

Fargo-Maple River

Rapid City-Elk City

Phillip-New Underwood

New Underwood-Ellsworth-Rapid City (2 lines)

Oahe-Glenham

Oahe-Phillip

Gavins Point-Yankton

This will be a three year project. We will consult with your office as each field season ends, so you won't have to wait for a final report.

We will have the following surveyed: splice points (at least 400' x 100'; staging areas, regenerations sites (4 acres) any trenching locations, and any place where access roads need improvement. We will also evaluate the transmission lines themselves for eligibility and effect.

There will be no visual change for the fiber optics. We will not consult with tribes at this time. Should sites be recorded, we will consult at that time. We hope to avoid all eligible properties.

Thanks for the conversation.

ATTACHMENT 6

NANCY COULAM'S MEMO TO ADVISORY COUNCIL ON HISTORIC PRESERVATION REGARDING PEP

UC-725
ENV-3.00

February 9, 2001

Don L. Klima, Director
Office of Planning and Review
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Ave., NW #809
Washington, D.C. 20004

Subject: Response to Letter Regarding the Programmatic Agreement for Glen Canyon Dam Operations and the Protocol Evaluation Panel Report

Dear Mr. Klima:

Thank you for the Dec. 6, 2000 letter from the Advisory Council on Historic Preservation regarding the status of compliance under the Programmatic Agreement for Cultural Resources Affected by Glen Canyon Dam Operations (PA) and the final report of the Protocol Evaluation Panel for Cultural Resources Affected by Glen Canyon Dam Operations (PEP). Before responding to your specific information requests, let me explain that consensus is the stipulated form of decision-making for signatories to the PA. Reclamation applies the definition and process for consensual decision making in Scholtes, Joiner and Streibel (1996); namely, a decision made by consensus is a search for the best decision through exploration of everyone's thinking or viewpoint on a topic. Consensus does not mean that everyone must be completely satisfied with the outcome, it does mean that everyone understands the decision and why it was made. Let me also explain that the PEP was convened during Fiscal Year 2000 as an independent body of outside peer reviewers to analyze strengths and weaknesses of the Grand Canyon Monitoring and Research Center's (GCMRC) socio-cultural program in conjunction with Reclamation's PA compliance program. The PEP was asked to identify strengths, weaknesses, and make management recommendations to improve both programs.

By consensus, the PA signatories agreed to implement all 11 PEP recommendations to help complete the three stipulations in the PA and to improve the integration and

coordination between the socio-cultural programs of the GCMRC and the PA. The decision to adopt the 11 PEP recommendations was made after consultation with all PA signatories. The consultation process included having all PA signatories participate in the actual PEP review, reviewing the final PEP report from June to July, 2000, submission of written comments on the recommendations to Reclamation and the GCMRC, meeting twice in July and August, 2000 to express comments and concerns with the recommendations and underlying assumptions of the PEP, presentation of the PEP report to the Technical Work Group (TWG) of the Glen Canyon Adaptive Management Program (AMP). By consensual decision-making, both the GCMRC and Reclamation have agreed to adopt all 11 of the PEP report recommendations to improve their separate and integrated programs. Table 1 lists the 11 recommendations.

Table 1. Cultural Resources PEP Recommendations Approved by PA Signatories.

1. Complete and adopt a Historic Preservation Plan (HPP) as a top priority.
2. Expand Native American involvement at multiple levels.
3. Improve coordination and integration of a complex program.
4. Refine the definition of the area of potential effects (APE) for the PA program.
5. Prepare a systematic evaluation of historic properties for the PA program.
6. Reassess geomorphology research priorities.
7. Redefine the cultural resource monitoring programs.
8. Develop an integrated historic property treatment plan for the PA program.
9. Develop a cultural resource database plan.
10. Expand public outreach and education activities.
11. Improve cultural resource contracting procedures.

The Council asked Reclamation to describe how the PEP's concerns and recommendations will be addressed. This is provided below, in sequential order based on the PEP recommendations in Table 1. Some recommendations are combined where appropriate. The Council's information requests are combined within the response to each of the 11 PEP recommendations.

Recommendation 1. Complete and adopt an Historic Preservation Plan (HPP) as a top priority. Provide the Council with a delivery date and outline for the HPP.

PA signatories agree that writing an Historic Preservation Plan (HPP) is the top compliance priority for Reclamation. Based upon the PEP report (Doelle 2000) and consensus by all PA signatories, the HPP will be a written document that describes how adverse effects of Reclamation's operation of Glen Canyon Dam will be resolved for eligible historic properties. The HPP shall consist of multiple subsidiary plans and Reclamation will serve as principal compiler. Work on the HPP has been initiated

based on principles listed in Table 2. The anticipated completion of the draft HPP is the end of FY03, as shown in Table 3.

Table 2. Principles for the HPP.

1. Reclamation will compile the Historic Preservation Plan (HPP) for purposes of Section 106 NHPA compliance for operation of Glen Canyon Dam, although GCMRC's Section 106 compliance responsibilities may be included.
2. Reclamation shall ensure that the HPP is developed in consultation with PA signatories and the Glen Canyon Dam Adaptive Management Program (AMP).
3. The HPP will include subsidiary plans.
4. The HPP shall be prepared by or under the direct supervision of an individual who meets, at a minimum, the Secretary of the Interior's Professional Qualifications Standards for one or more of the cultural resource professions. The HPP contractor will have demonstrated experience completing HPPs, or Historic Property Management Plans, Historic Resource or Cultural Resource Management Plans.
5. The HPP shall be prepared with reference to the Secretary of the Interior's Standards and Guidelines for Preservation Planning [48 FR 44716-20]; 36 CFR 800; the NPS Director's Order 28, Arizona SHPO, and Navajo, Pueblo of Zuni and Hualapai THPO standards and guidelines; the Society for American Archeology Principles of Archaeological Ethics, etc.
6. Disagreements about the draft HPP will be resolved through consultation among the PA signatories. If agreement cannot be reached, the dispute will be forwarded to the AMP for resolution.
7. Geographic Information Systems (GIS) and a centralized database shall be the primary means of providing integration and coordination.
8. Results of the HPP will be integrated into the broader AMP and disseminated to various public and professional audiences, as appropriate.

Table 3. Draft Outline for the HPP.

1. Introduction. The introduction shall describe the organization and use of the sections of the HPP.
2. Background. The purpose and scope of the HPP will be defined. The parties involved in the HPP shall be defined, along with their authorities, responsibilities, and relationships. A flowchart to map the HPP processes and relationships may be included.
3. The Area of Potential Effects (APE) shall be defined and mapped.
4. Direct and indirect effects will be described and projected within the APE.
5. Subsidiary Plans:
 - A. Research Design, including property types and comparisons of National Register eligibility and values (Criteria A-D). Contract award anticipated in Feb. 2001.

- B. Treatment Plan. Plan depends on research design; contract will be issued in FY02. Treatments will be initiated in FY03.
- C. Data Management Plan. Reclamation has initiated planning in FY01, will coordinate and transfer data to GCMRC during FY02.
- D. Monitoring Plan. Depends upon results of research and treatment plans. An integrated plan will be started in FY02; the full monitoring plan may not be completed until after the treatment plan is finalized in FY02.
- E. Public Outreach Plan. Contracted by GCMRC and Reclamation in FY03.
- F. Tribal Consultation Plan. Initiated in FY01, tribes taking the lead.
- G. Curation Plan and NAGPRA Plan of Action. Written by PA signatories during FY03.

Recommendation 2. Expand Native American involvement at multiple levels. Provide the Council with a description of how tribal interests will be addressed and consultation carried out.

The PA is one component of the Glen Canyon Dam Adaptive Management Program (AMP). The major process by which tribes are involved in the PA and AMP is consultation, or dialog between designated government representatives about trust assets, resources, and other tribal interests. This dialog involves a thorough exploration of ideas, viewpoints, and interests as they relate to operation of Glen Canyon Dam. Consultation within the AMP takes place formally at the meetings of the Technical Work Group (TWG), Adaptive Management Work Group (AMWG), Kanab Ambersnail Work Group, as well as the PA meetings. Informal consultation takes place at meetings such as the Native Fish Work Group, over the telephone, via email.

Another process of the PA and AMP in which tribes are involved is monitoring effects of dam operations via river trips. These trips have been funded since the 1980s and the Glen Canyon Environmental Studies Program. Monitoring has enabled tribes to identify their interests, identify eligible historic properties and effects, and to begin to resolve these effects.

Currently, tribal consultation for the AMP and PA is funded through cooperative agreements with Reclamation. The cooperative agreements are funded at a level equivalent to that required to maintain a professional Federal full-time (GS-12) employee and support staff; i.e., at \$80,000 per tribe per year. These funds are designed to provide the five AMP/PA tribes with the opportunity to participate as much or as little as their interests dictate in government-to-government consultations of the PA and AMP.

Recommendations 3 and 9. Improve coordination and integration of a complex program and develop a cultural resource database plan. Provide the Council with a discussion of Reclamation's staffing and funding of the project in light of this PEP recommendation.

The PEP identified lack of coordination and integration as one reason the PA stipulations have not been completed. Their solution was to create a new position of senior cultural resource manager whose primary responsibility would be integrating research and compliance across interagency and intertribal divisions. After due consideration, this solution has been determined to be unnecessary. Instead of hiring a senior cultural resource manager, the PA signatories are proposing to include within the HPP an explicit definition of how their statutory authorities and responsibilities overlap within the area of potential effects (APE) of Glen Canyon Dam operations. This narrative explanation will be coupled with a graphic depiction or map. This should enable the PA signatories to work together more effectively.

Reclamation's recognition of a need for maps depicting areas of overlapping interest within the APE coincided with GCMRC's expansion of data base management capabilities, as well as their ability to procure and manipulate georeferenced and remote sensing data through use of a Geographic Information System (GIS). The availability of remote sensing data, new computer-based modeling efforts, and the designation of the GCMRC's GIS and database management systems as an integrative mechanism for the AMP provides a solution to the PEP's call for improved integration and coordination.

This decision to use GCMRC's information management capabilities to improve integration and coordination coincides with the PEP's recommendation to write a database management plan as one of the subsidiary plans in the HPP. Therefore, beginning in FY01, Reclamation has proposed specific steps to create an integrated, georeferenced database of eligible historic properties and dam operational effects at GCMRC. The steps are listed in Table 4.

Table 4. Database Integration Steps.

1. Identify and inventory existing cultural resource data and data structures necessary for Reclamation's compliance purposes.
2. Obtain export files of all identified useful data (resolve public domain, intellectual property and confidentiality or sacred site issues, etc.)
3. Examine data files for forms of the variables, redundancies, etc. (Hire a statistical contractor.)
4. Determine what data are needed in the integrated database; formulate potential database queries.
5. Design and program database structure.
6. Populate database.
7. Provide GCMRC with database.

Reclamation has earmarked approximately \$40,000 for database integration during FY01 and another \$25,000 in FY02. By the end of FY02, the integrated database should be fully functional at the GCMRC.

Another aspect of integration and coordination that the Council questioned is the adequacy of Reclamation's staffing and funding for the PA program. Reclamation will fund administration of the PA program at \$50,000 per year. The funding covers 89 days and 10 trips for the regional archeologist. The funds also cover salary and expenses of procurement and assistance specialists. Funding is also available for the Council to attend PA signatory meetings.

Recommendations 4 and 6. Refine the definition of the area of potential effects (APE) for the PA program and reconsider geomorphological research priorities. Provide the Council with a map delineating the location of the APE, and modifications or refinements proposed by Reclamation for the HPP.

The PEP recommended that the area of potential effects for dam operations be defined as the full extent of mainstem Holocene sedimentary deposits. While PA signatories agree this recommendation makes sense for GCMRC's research and monitoring programs, it is unclear whether substituting one APE for another advances Section 106 compliance. The main purpose of the monitoring programs was to define where within the 256,000 cfs APE observed effects of dam operations occur that result or have the potential to result in a loss of integrity of essential physical features. To help resolve this question about location of effects within the APE (existing or proposed), Reclamation is seeking additional information from geomorphologists. Geomorphological information, coupled with the results of monitoring, will be used to refine the definition of APE.

Also, to respond to the Council's request for a map of the APE with an overlay of site locations, Reclamation has requested the GCMRC provide such a map through their Information Management Systems group who are uniquely qualified to produce this type of georeferenced data for the Grand Canyon and Glen Canyon Dam operations. Given the need to calculate stage-discharge relationships, it has not been possible to accurately map the APE; however, it should be possible to provide this map to the Council and all PA signatories by the end of 2001.

Recommendation 5. Prepare a systematic evaluation of historic properties, including Traditional Cultural Properties.

In 1991, Reclamation completed its reasonable and good faith efforts to identify historic properties within the APE. These efforts were conducted by the NPS and

were published in the inventory report by Fairley et al (1994). A consensus determination of eligibility was made for all sites located within a district bounded by the 256,000 cfs inventory area or APE. The determination of eligibility included approximately 322 archeological and historical sites.

Consultation with Indian tribes that attach religious and cultural significance to these and other potentially eligible properties with the APE continued throughout the 1990s. Dr. Thomas F. King assisted the PA signatories in preparing a draft consensus determination of eligibility for the tribe's traditional cultural properties. In January, 2001, the draft was revised and is being circulated for final comment to the PA signatories. Final agreement on this consensus determination of eligibility is expected before the end of FY01.

The absence of a final consensus determination of eligibility for the traditional cultural properties of the tribes, coupled with the passage of time, the loss of integrity to the sites since the 1991 inventory, and changing perceptions of significance, led the PEP to recommend that a full research design with site-by-site determinations of significance be written. Reclamation and the GCMRC have issued a joint contract for a research design and National Register evaluation/reevaluation. The contract is scheduled to be awarded by the end of Feb., 2001. Completion of this contract should result in a current evaluation of historic significance of the properties within the APE, and a comparison of their relative values as per the Secretary's preservation planning standards and guidelines. This will become the basis for the treatment plan in the HPP.

Recommendation 7. Redefine cultural resource monitoring programs. Provide the Council with a description of how monitoring will be carried out in the interim until acceptance of the final HPP.

Since the intensive inventory for historic properties was completed in 1991, the tribes and National Park Service (NPS) have monitored effects of dam operations on historic properties. Changes have been documented, but cross-scale linkages between the larger ecological setting, hydrodynamic and geomorphological processes, essential physical features, and integrity of historic properties have not been modeled, nor have data been generated to a degree of statistical validity for incorporation into the conceptual model being developed for the Colorado River ecosystem. Therefore, the current monitoring programs will be continued through FY01 and FY02 to provide historical data (in the sense of Walters 1997). These data are expected to be synthesized in FY02 for incorporation into the treatment plan in FY03. Future monitoring efforts for cultural resources will be integrated with the natural resource monitoring programs of the GCMRC.

Recommendation 8. Develop an integrated historic property treatment plan for the PA program.

Data from the monitoring programs and systematic classification and comparison of sites will be incorporated in a treatment plan that will be designed to resolve effects of dam operations on eligible properties. Production of this plan will be contracted in FY03 and work will be initiated as soon as the plan is finalized. The tribes are expected to take a particularly active role in preparing this plan, especially since the systematic assessment of properties and application of the Secretary's preservation planning standards may demonstrate that associative values to the tribes under Criteria A and B outweigh the information values under Criterion D.

Recommendation 10. Expand public outreach and education activities.

Expansion of public outreach and education shall be planned as part of the HPP. Funds will be earmarked during FY03 from both Reclamation and the GCMRC to contract with a public relations specialist to prepare outreach and educational products and activities. Reclamation fully endorses the Society for American Archeology's Principles of Archaeological Ethics that public education and outreach and public reporting and publication are essential and part of the underlying ethic of the PA program for Glen Canyon Dam.

Recommendation 11. Improve cultural resource contracting procedures.

The PEP report recommended greater use of nationally advertised and competed contract work for both the GCMRC and Reclamation. This recommendation will be achieved by ensuring training for GCMRC and Reclamation staff in contract management under the Federal Acquisition Regulation. During FY01, an experiment is being conducted using the systematic evaluation and research design contract to ascertain if Reclamation's compliance needs can be met by issuing joint contracts with GCMRC. It is not presently clear if this will be a future strategy for joint projects or if there is a better method to improve contracting procedures. In the spirit of adaptive management, different strategies will be evaluated and explored to improve contracting and the quality and utility of deliverables.

I hope this letter has addressed all your concerns. If you have any comments or questions, please contact Nancy Coulam at (801) 524-3684.

REFERENCES CITED

Doelle, W.H., (compiler)

2000 *Cultural Resources Protocol Evaluation Panel Report submitted to the Grand Canyon Monitoring and Research Center and the U.S. Bureau of Reclamation, Upper Colorado Region*. Report on file, Reclamation, Salt Lake City.

Fairley, H.C., P.W. Bungart, C.M.. Coder, J. Huffman, T.L. Samples, J.R. Balsom
1994 *The Grand Canyon River Corridor Survey Project: Archaeological Survey along the Colorado River between Glen Canyon Dam and Separation Canyon*. Glen Canyon Environmental Studies, Cooperative Agreement 9AA-40-07920. Report on file, Reclamation, Salt Lake City.

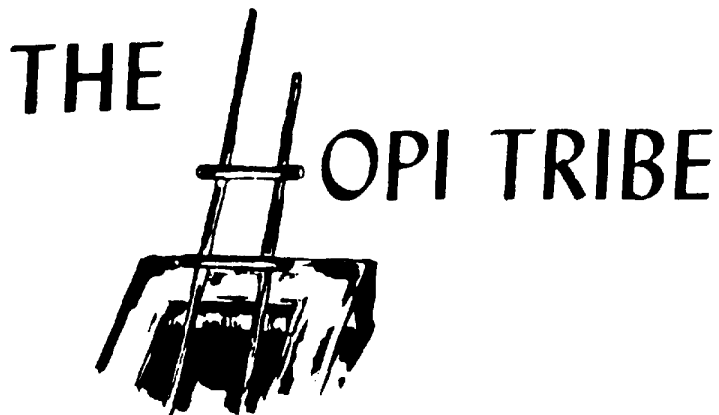
Scholtes, P.R., B.L. Joiner, and B.J. Streibel

1996 *The Team Handbook*. Oriel Inc., Madison, WI.

Walters, Carl

1997 Challenges in Adaptive Management of Riparian and Coastal Ecosystems. *Conservation Ecology* [online] 1(2):1-22.

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CHAIRMAN

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VICE-CHAIRMAN

18 July 2000

Dr. Nancy Coulam, Regional Archaeologist
Upper Colorado Regional Office
Bureau of Reclamation
125 South State Street
Salt Lake City, Utah 84138

Ms. Ruth Lambert, Cultural Resources Program Manager
Grand Canyon Monitoring and Research Center
2255 North Gemini Drive, Room 341
Flagstaff, Arizona 86001

RE: Hopi Tribes Comments on the Final Report: Cultural Resources Program Assessment

Dear Dr. Coulam and Ms. Lambert,

The Hopi Tribe appreciates the opportunity to review the *Final Report: Cultural Resource Program Assessment (PEP Review)* and would like to provide the following comments. The Hopi Tribe is very supportive of the outside review process and feels that it is critical that it remain independent. Therefore, while it is important to obtain feedback regarding the PEP Review from the Programmatic Agreement signatories and others affected by the recommendations in this report, the report itself should not be modified based on any feedback comments. The comments should be considered by the appropriate agencies as they develop management and research actions derived from the report recommendations.

In general, the Hopi Tribe strongly agrees with the findings and recommendations discussed in the PEP Review and feels that if they are acted on, the Programmatic Agreement and Grand Canyon Monitoring and Research Center (Center) programs will significantly improve. The Hopi Tribe has focused our comments to the Core and Supplementary Recommendations sections as these effectively capture the content of the sub-panel reports. These comments follow a brief discussion of observations applicable to the entire document.

First, it appears that the report, and in particular the recommendations, are strongly biased towards the Programmatic Agreement (PA) program. There is little direction provided to the Center about how to interact with the Native American Tribes, the PA program, and which aspects of the cultural resource domain should be undertaken by the Center. Therefore, the direction and types of research undertaken by the Center as well as how the Center integrates its program with the work undertaken under the PA needs

to be a topic of discussion. One possible approach is to develop a guidance integration document as part of the supporting documents to the Historic Preservation Plan (HPP). This document would accomplish a portion of the integration called for in the third Core Recommendation. In general, the Hopi Tribe sees the Center taking the lead in research directed toward better understanding the Colorado River eco-system processes as a whole (as opposed to research directed at specific compliance actions), occasional synthesis and analysis of the cumulative results of compliance and monitoring activities in order to place these into a regional framework, and all cultural work associated with non-register eligible resources including most of the tribal monitoring and research.

Second, there is a disconcerting disconnect in the report between the continued call for enhanced tribal participation and the pragmatics of developing many of the guiding documents. Specifically, the tribes are generally relegated in this report to only assistance roles. The Hopi Tribe recognizes that the Bureau of Reclamation, the Center, and the National Park Service have legally mandated lead roles regarding certain activities within both the PA and cultural programs, however, the general lack of recognition of commensurate tribal roles is quite disturbing. A blatant example of this shortcoming is the fact that there is land under the management of two Native American tribes within the project area, these same tribes also have federally recognized Tribal Historic Preservation Office status, and yet are not recognized or considered along with the NPS as land managers. When formulating the basic philosophy for the PA and the cultural programs, the tribes need to have a role equal to all of the other PA signatories; because the vast majority of the resources being considered in these complementary programs are directly associated with and a relic of the history and culture of the participating tribes.

CORE RECOMMENDATIONS

-Complete and Adopt a Historic Preservation Plan (HPP)

The Hopi Tribe strongly supports this recommendation. It is clear that without fundamental guidance for the long-term goals of the Programmatic Agreement program and a plan for achieving these goals, the program will become more and more stagnate and irrelevant to the greater Adaptive Management Program (AMP). Moreover, by identifying the program's direction and its desired result, an evaluation of the program's progress and success can be effectively achieved. One area that should be discussed in the HPP, which was not mentioned in the PEP report, is how the PA program and the Center's cultural program interface. For example, how will the PA group recommend projects or research topics to the Center and how will the Center incorporate the PA program into a review capacity for projects that address PA issues, but are substantially broader than specific compliance activities. Examples of these types of projects could include synthesis projects, research into geomorphic processes, and historic context development. This may also be a method for addressing Core Recommendation 3, Improve Coordination of a Complex Program.

-Expand Native American Involvement

The continued need to maintain and enhance Native American involvement in both programs should be an undisputed issue. This will particularly be the case if the Grand Canyon is formally recognized as a register eligible property on the basis of its traditional cultural importance. Many tribal concerns identified in the PEP report can be addressed through better program coordination, information dissemination, and the successful integration of traditional values and concerns. While the roles of the tribes are fairly well understood in the overarching management realms of the PA program and the AMP, it

is at the level of implementation of the various science and research programs that there is little or no coordination. Currently, there is no formal mechanism for tribes to get briefed or provide input on the various research projects that are to take place prior to their implementation. This means that any comments or desire by any participating tribe to coordinate with researchers (particularly outside of the traditional cultural resources arena) is very difficult, if non-existent.

On the other hand, the call for enhanced Native American involvement should not be taken as a directive to create parallel Native American and non- Native American science programs for the same resources. Where data needs are compatible, tribes should seek to form alliances with other scientists to form more holistic studies while minimizing redundancy. Better dissemination of information regarding projects that are proposed at an early stage can allow these partnerships to be pursued.

-Improve Coordination of a Complex Program

This is a key recommendation for providing a more successful and productive integration of tribes into both the PA and cultural programs. As it currently stands, there is little understanding by the tribes of what happens administratively and what the roles are for tribes between the discussions held at the PA and AMGW/TWG meetings, the internal decision-making process of the BOR and the Center, and the distribution of final project reports. Further, there is little, if no, formal coordination between the activities of the PA group and those of the Center. Better clarification of these interrelationships will go along way towards getting tribes out of the mode of only responding after the fact.

SUPPLEMENTAL RECOMMENDATIONS

-Refine the Definition of the Area of Potential Effect (APE)

The Hopi Tribe strongly supports the adoption of the Holocene deposits as the basis of the APE. The need to identify (and agree on) the effected area that is within the PA program is critical to advancing the program. Because the Holocene deposits are most directly tied to riverine processes and these same deposits seem to have been most altered by the emplacement and operation of Glen Canyon Dam, this is a logical selection for the APE. The sediment supply that historically created this habitat has been significantly diminished by the presence of Glen Canyon Dam and therefore is the area mostly likely to be effected by the operations of the Glen Canyon Dam. This is not to say, however, that all impacts within this zone should be attributed to the operation of Glen Canyon Dam. Quite to the contrary, the identification of the processes that create negative effects within the APE needs to be on a case by case basis. The HPP should delineate an approach by which effects can be apportioned, as this is, and will continue to be, a major area of contention. The Hopi Tribe recognizes that there is a continuum from direct, dam caused impacts to historic properties to negative impacts that are the result of processes completely outside the purview of dam operations. Moreover, the responsibility for these impacts may not be crystal clear and that it may necessitate a somewhat arbitrary division of responsibility, but that this division should be agreed to up front by the PA signatories so the program can get on with the necessary work.

In addition, there may be the need for a separate APE for significant biological resources affected by processes apart from strict erosion due to long term sediment depletion. A stage/flow based APE may be more appropriate for these classes of resources.

-Prepare a Systematic Evaluation of Historic Properties

Although this heading is somewhat misleading because the recommendation is foremost a call for a research design, the Hopi Tribe agrees with this recommendation. The lack of an overall research goal has hampered the program in many critical ways, not the least of which is the prioritization of work and the ability to know when research questions have been answered and if feature classes/sites are providing redundant information.

The Hopi Tribe strongly encourages that the research design be prepared in conjunction with the goals in the HPP, the monitoring plan and the treatment plan. There are some basic philosophical issues that need to be resolved within each of these sub-plans before the structure of an adequate, long term research design can be formulated. For example, the reconciliation between preservation in place verses full data recovery for multi-feature sites where only some of the features are, or ever will be impacted, needs to be resolved as this will effect the scale at which research questions are pursued.

-Reassess Geomorphological Research Priorities within the GCMRC Cultural Program

Currently underlying the geomorphological studies is the need to demonstrate that erosion at archaeological sites is related to Glen Canyon Dam and its operation in order to assign responsibility. The PEP review indicates that this is not being achieved (and possibly can't be achieved). Therefore, the Hopi Tribe agrees that the geomorphology priorities need to shift. If an agreement can be made regarding responsibility (as mentioned in the APE section above), then geomorphological research could be focused towards other issues such as site formation, aeolian processes, and how interpretation of the past is biased by the long-term preservation of Holocene deposits. Any studies of erosion rates will need to be closely tied to the monitoring program and the way it is structured.

-Redefine the Cultural Resource Monitoring Program

The Hopi Tribe mostly agrees with the recommendations presented in the PEP report concerning the cultural resources monitoring program. While the existing monitoring program has been successful in identifying existing impacts and new impacts (a function that should be retained in any future monitoring program) to sites, it has not been successful in developing models for predicting when or where additional impacts will occur. Likewise, the data collected to date has not been able to distinguish base erosion rates (whether considered to be with or without the dam) from the rates at sites with stabilization. Therefore, changes to the monitoring program should be made in order to address specific research questions. Because long term monitoring may be the only way to get at overall erosion rates, the monitoring program should be carefully integrated with the geomorphological research and as such may be more effectively managed through the Center rather than under the PA program.

The Hopi Tribe questions how much of the monitoring effort (under the PA program) should be focused on tracking how visitor activities are modified through management actions. While identification of visitor impacts is appropriate to record during monitoring activities, the cause of these impacts is much more closely related to NPS management and permitting activities than to dam operations. Therefore, this aspect of monitoring should be carried out through the Center (or within the NPS structure) rather than through the PA program.

Similarly, tribal resource monitoring (as currently practiced) would be much more appropriately carried out under the Center programs. This would allow better integration with the other research efforts

looking at the same resources and the integration of tribal information into the overall adaptive management program. Close integration between the Center and the PA is critical to the needed development of a two-way exchange of information that is imperative to both programs. This will be particularly true if the Grand Canyon is determined as an eligible property (TCP) and virtually all resources in it are considered contributing elements and therefore in some sense within the purview of the PA program.

-Prepare a Cultural Resource Database Plan

The Hopi Tribe agrees that integration of the cultural resources database with the remainder of the Center database would further the goals of the overall program and would allow for more creative and innovative analyses to be undertaken. Of course there are some issues related to access and confidentiality that will need to be addressed, both for archaeological information and for tribal information. The Hopi Tribe is confident that these issues of confidentiality can be successfully negotiated.

As with other aspects, the database needs to be developed in order to meet the needs of both management queries and to provide support for defined research goals. An appropriate methodology to incorporate tribal data needs to be carefully designed as long-term monitoring data may necessarily be in a very qualitative form and not readily comparable to quantitative data.

-Develop an Integrated Historic Property Treatment Plan

It is not clear how this recommended plan differs from some of the aspects of the Research Design and the HPP, although the information that is called for in it definitely needs to be contained in one or more portions of the overall program. The appropriate classes of sites for selection should be derived from the Research Design and the HPP should provide the philosophical basis for choosing among the various options. The final portion of site treatment should be contained in the specific research plan developed by the contractors that will be conducting the mitigative work. It is the specific research plan, and how well it addresses the overall goals of the Research Design that should be used (in part) for selecting contractors.

-Expand Public Outreach and Education Activities

The Hopi Tribe has long felt that this should be a component of both the Center and the PA programs. It may be appropriate to have the Center commission a study that identifies the best mechanisms for achieving a broad, effective public outreach program. Alternatively, maybe a public relations firm could be hired to actually develop a program. Obviously, some audiences, such as tribal members, will need to be approached by the appropriate individual program participants.

- Improve Contracting Procedures

The Hopi Tribe agrees that tribal participation should be written into Requests for Proposals (RFPs) for much of the work. This may be the only mechanism that allows tribes to be adequately involved in the process. Without this, tribes will remain relegated to the role of commenting on completed activities and not really a part of designing how and where the programs are going in the long-term. Additionally, because of the potentially unique situation that projects related to tribes can have, there should be a mechanism for funding unsolicited proposals. These proposals should still be subject to the same review processes as any other proposal. Mechanisms that allow review of RFPs (particularly if it is to address an aspect of the PA) by signatories without impinging on conflict of interest provisions will need to be considered.

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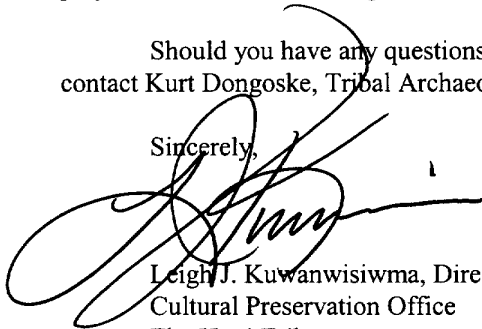
Letter to Dr. Coulam and Ms. Lambert

RE: Hopi Tribe's Comments on the Final Report: Cultural Resources Program Assessment

One contracting issue that the Hopi Tribe would like to see addressed is how tribal participation in the adaptive management program, tribal monitoring programs, and specific tribal research projects are addressed. Currently, these three ostensibly separate aspects are often lumped into a single operating budget for the tribe's participation in the overall adaptive management program. The Hopi Tribe suggests that the participation be an annual amount (as a line item in the overall AMP administration component of the budget) used to ensure participation of the tribe in the broader AMP. All funding for tribal monitoring activities should be based on a formal proposal submitted by the tribe that details the long term monitoring activities, data to be obtained, outreach activities, etc. This monitoring work, if approved, would be funded through a contract, probably administered through the Center, and would be multi-year (5 years) in scope, and eligible for renewal based on periodic reviews. Finally, the third class would be specific research projects that would be managed the same as any other contracted project.

Should you have any questions or comments regarding the position of the Hopi Tribe please contact Kurt Dongoske, Tribal Archaeologist, or me respectively at 520/734-3761 or 520/734-3751.

Sincerely,

A handwritten signature in black ink, appearing to read 'Leigh J. Kuwanwisiwma', is written over the word 'Sincerely,'.

Leigh J. Kuwanwisiwma, Director
Cultural Preservation Office
The Hopi Tribe

Xc: PA Signatories
Technical Work Group

Advisory Council Comments

July 18, 2000

To: Meeting participants, July 18-19, 2000

From: Jane Crisler and Margie Nowick, ACHP-Denver

Re: Glen Canyon Cultural Resources PEP Report

On July 5, 2000, we received the final report of the Cultural Resources Protocol Evaluation Panel (PEP) regarding the implementation of the 1994 Programmatic Agreement and GCMRC program. Because the Council will not be present at the July 18-19th meeting and GCMRC technology apparently prevents us from participating by speaker phone, we have prepared these initial comments for the meeting participants. We may prepare more detailed comments in the near future. In general, the Council is supportive of the general direction of the PEP report. However, we do wish to emphasize a few major points at this time.

- 1st core recommendation re Historic Preservation Plan (HPP): Our vision of the HPP is that it consists collectively of the several subsidiary documents outlined in the Report (cf., page 5 and Appendix B) and the more conceptual HPP discussed therein. We believe that it will be easier to reach consensus among the many parties, including the Council, if substantial attention is given initially to the more tangible tactical or subsidiary plans outlined on page 5 of the Report rather than the more conceptual HPP document. We believe that the tangibility and detail of the subsidiary documents are necessary to bring order, predictability, and consensus to the management of historic properties. Accordingly, we strongly recommend that work be focused first on developing these more tangible, subsidiary documents and then on the more conceptual HPP and doing so in several phases of work:

- Phase 1, produce the following documents simultaneously: the Research Design, Database Plan, Traditional Cultural Properties Plan, Native American Consultation Plan, and a historic property conditions report (a summary of the monitoring results to date and evaluation of the condition and existing threats to historic properties) for use in developing the monitoring plan and treatment plan.

- Phase 2, produce the Monitoring Plan and Treatment Plan.

- Phase 3, produce the HPP as the more conceptual document *based on the subsidiary documents*

-2nd core recommendation re expanding Native American involvement: We are strongly supportive of this recommendation and believe that new ways of addressing the general concerns of tribes and the values of historic properties and TCBs important to them need to be developed, particularly as outside contractors increasingly carry out program tasks.

-Appendix B, page 52, step 8. We believe that this statement about Reclamation having a "sliding scale" of financial responsibility for data recovery is a gross misunderstanding of Federal historic preservation law and urge that this entire item be disregarded. Reclamation is responsible for complying with Section 106 for the operation of the Glen Canyon dam to the extent that it affects historic properties, just as NPS is responsible for complying with Section 106 for visitor impacts to historic properties. This is done via implementation of the PA and an agreed-upon HPP. While the monetary expenses associated with cultural resources work may vary over time according to the tasks outlined in the agreed-upon HPP, Reclamation's overall legal responsibility to comply with Section 106 will not diminish over time.

GCRG Comments

Memo

Date: 9/24/00

To: Ruth Lambert

From: Andre Potochnik

Re: My comments on the PEP review of the Cultural Resource Program, Grand Canyon Monitoring and Research Center

I have read the Cultural Resource Program Assessment, the Protocol Evaluation Panel's report on the GCMRC Cultural Program. My comments pertain to the Geomorphology subpanel (subpanel) report on the Cultural Resources Program Assessment, and mostly to the GCMRC administrative report by Thompson and Potochnik (2000).

General Comments:

- 1) The subpanel makes no comment on one of the two primary objectives of Thompson and Potochnik, 2000: the predictive geomorphic model for cultural site erosion in Grand Canyon. This is a regretful omission, because the model is an useful tool for the NPS-NAU archeological monitoring team to focus their efforts on the most vulnerable sites.
- 2) The subpanel criticizes the lack of scholarly references in the Thompson and Potochnik report, but provide no additional references to support their technical comments. The Thompson and Potochnik report incorporated the comments of 13 peer reviewers before it reached the subpanel.
- 3) The subpanel criticizes the direction and scope of the Thompson and Potochnik report but does not acknowledge that the report simply responded to the dictates of the RFP.
- 4) The subpanel does not acknowledge that geomorphic processes need to be studied over longer periods than two years to test hypotheses, an impossibility for the Thompson and Potochnik study.

Comments on the section of the report, "Overview and Analysis of the 'Erosion Question'":

p. 39 para. 1: The subpanel begins by stating "erosion is inevitable" and "the system is supply-limited by its very nature". No references or supporting statements are given to back up these conclusions. The subpanel should include a temporal component to let the reader know the time scale of these assertions (ie. 10^2 - 10^6 years?) with supporting references.

p. 39 para. 2: Thompson and Potochnik did not "speculate" about the importance of eolian activity. For 119 catchments they recorded its effects (appendix B), quantified its relative importance (fig. 3.23) and proposed that it be further examined for its role in the long term preservation of cultural sites. This is the type of study the subpanel recommended in their introduction to this section, the foundations of which are laid by

Thompson and Potochnik.

p. 39 para 2: The subpanel states, "original hypothesis has not been tested and is somewhat flawed conceptually". Testing the base level hypothesis was one of two primary objectives in the Thompson and Potochnik report. Thompson and Potochnik proposed and tested multiple working hypotheses: null, climatic, and base level to explain apparent increased rates of gully erosion. Does the subpanel have another hypothesis? Their statement that the original hypothesis is "flawed conceptually" is not explained, and therefore is not helpful. Do they mean that the application of the base level concept itself is flawed, or the is the flaw in how the hypothesis is stated?

p. 39 para 2: Thompson and Potochnik did not build the model on the base level hypothesis. Model construction was a completely separate line of inquiry. The Thompson and Potochnik predictive mathematical model is based on a process model. The process model describes the variety of processes by which a stream channel extends itself across terraces in the downstream direction. Thompson and Potochnik built the model deductively, on a prodigious data set of: 1) measured geomorphic parameters (p.25-27) and 2) empirical observations of the actual processes acting on small catchments and terrace sequences (n=119) (see appendix B, p.22-35, p. 93-109, GCMRC data archives). The model was supported inductively from previous work on processes of drainage integration established by other workers (eg Higgins and Coates 1990).

p. 39 para 3: Referring to the last sentence, if B and C were not adequately tested, how would the subpanel recommend accomplishing that task?

p. 39 para 4: Thompson and Potochnik did not employ a "single hypothesis driven structure". They deliberately broadened it to three hypotheses in order to answer the question "what is causing the erosion". If the question doesn't include: climatic variation, sediment supply, or base level effects, what would the panel propose would be a driving mechanism? Thompson and Potochnik addressed the statement "is the rate of increase unprecedented in the recent geologic record" by incorporating previous work and analyzing climatic data throughout the 20th century (p.50-53). Perhaps the climatic analysis can be extended to longer time frames, but this was beyond the scope of the Thompson and Potochnik study.

p. 40 para 1, last sentence: In reference to the subpanel's statement need for "testing, analysis and comparison of eroding and non-eroding sites in similar settings". Thompson and Potochnik accomplished this by: 1) classifying the large variety of small catchments into five geomorphic settings (fig.2.3, appendix B), 2) established and studied type localities for each of these settings (p.93-97, plates 1-6); and, 3) established and compared analogous study sites in an outside control area, Cataract Canyon (eg table 3.3, table 3.4). To accomplish this, they first described the alluvial architecture of Cataract Canyon and correlated this architecture with that of Grand Canyon (the work of Hereford and colleagues). Future studies could include more finely tuned comparative work that might provide more robust conclusions. Despite formidable logistical challenges, paucity of

previous work, and the short time-frame, Thompson and Potochnik provided an important methodologic framework on which future comparative studies can be based.

p. 40 para 2: This concluding paragraph raises a very important conceptual issue about how river stage may control the base level of small catchments. Thompson and Potochnik attempted to convey that the “base level hypothesis” for small catchments is not a function of river stage. Rather, it is a function of the height of sand bars deposited and maintained by annual river floods over some relevant time period (100 year flood?). Given the extremely sporadic and highly variable magnitude of runoff events in small catchments, the volume/frequency of river sand bar deposition provides the effective local base level for small catchments. The relevant factor to the grade of these gullies (or incipient gullies) is the magnitude of river sand bar deposition in comparison to the magnitude of runoff events in the small catchments. System-wide, the predam and postdam average stage of the river is not particularly relevant to base level control of gully erosion, but the height/volume/renewal rate/biotic colonization of river sandbars is very relevant to local base level control.

Comments on the section:

“Comments on Thompson and Potochnik’s Study” p. 39-40

Bullet comment #1: In order to systematically study the alluvial architecture of high terraces, one would need to dig trenches through numerous predam terrace sequences along both strike and dip. To deduce predam fluvial dynamics and sedimentary processes throughout Grand Canyon would entail substantial impact to the environment and a lot of time. This was not within the scope or mandate of the Thompson and Potochnik study. Moreover, trenching would likely destroy the context of cultural features. However, much can be learned of fluvial architecture from gully walls and data recovery sites. This underscores the importance of the subpanel recommendation for having an experienced geomorphologist who works closely with the monitoring and data recovery teams and is well-versed in the Research Design of the program.

Bullet comment #2: The subpanel’s hypothesis that there has been “progressive downcutting and lateral migration of the river channel” needs to be tested. Thompson and Potochnik (personal communication) found evidence to suggest that the ap terrace (alluvium of Pueblo II age) may have been inundated by flood events in the late 1880’s. This is very important for understanding the rate and frequency of high terrace deposition and preservation since Puebloan times. This hypothesis is testable and needs to be tested, because it may profoundly influence the concept held by the subpanel that the river channel is progressively and incessantly degrading through late Holocene time.

Bullet comment #3: Once again, base level effects may “*drive* or *offset* erosion”, depending on magnitude and frequency of river sand deposition at the mouths of catchments.

Bullet comment #4: Thompson and Potochnik consulted with various researchers to find

small catchment models in the literature relevant to Grand Canyon but were unsuccessful. Perhaps the subpanel can provide some suggestions here. Hereford and colleague's work is the most relevant data for the system examined. Thompson and Potochnik did not consider channels across river terraces as a hillslope processes, rather they considered them ephemeral or incipient stream channels. Nonetheless, more work needs to be done on the talus/bedrock hillslope system leading into these sand terraces to refine their predictive model (p.119).

Bullet comment #5: Thompson and Potochnik did not "favor verification of the base level hypothesis" in their Introduction. Rather, they sought to thoroughly articulate the hypothesis. It was not considered a foregone conclusion.

Bullet comment #6: Perhaps channel slopes may be steeper than "classic arroyos", nonetheless they are arroyos by most definitions. Thompson and Potochnik focused on channelized flow across a fine sediment substrate. Also, see Bullet comment #4 above.

Bullet comment #7: The Thompson and Potochnik study agrees with those of Webb and Hereford in that: increased warm season rainfall during the past two decades has probably accelerated gully erosion of predam terraces. Their point is: if the rate of rainfall-induced erosion of the past two decades is extrapolated over the past 2000 years, it is doubtful that any cultural sites in high terraces would still exist. Admittedly, this is a supposition or educated guess, but no less so than the reviewer's corollary comment that "much of the... alluvium with...archeological sites is most likely already gone". If one of these statements is "faulty reasoning because it is unfalsifiable" then the subpanel's statement is also unfalsifiable. Under these circumstances, an educated guess based on extensive observation may be the best one can do. It would be helpful to hear the subpanel's thoughts on this subject.

Bullet comment #8: The subpanel should review the Thompson and Potochnik report on the geomorphic model (p. 22-27 and p.96-99). These sections describe what the subpanel says is missing, a description of the processes linking hillslope environment across the terrace environment to the river environment. Processes in each of these three environments are very different from one another. Also, who is the other researcher the subpanel refers to (references are needed).

Bullet comment #9: re: Cataract Canyon comparison: see Thompson and Potochnik Tables 3.3 and 3.4. and read that section of the report. Thompson and Potochnik state that the only terrace in Cataract Canyon that is annually flooded is the T5 terrace (45,000 cfs), not all five terraces as the reviewers attest. See p. 39-50, results and discussion of tests of the null hypothesis.

Also, detailed examination of the regrading process in catchments resulting from river flood deposits would require numerous river trips over many years to document how this process may or may not occur. It was far beyond the scope of what could be observed in a short two year study, given the sporadic nature of precipitation events. Long term study sites to document the validity of this re-grading process would be a worthwhile monitoring

effort.

Bullet comment #10: It would be useful to relate precipitation rates to infiltration rates, but obtaining that data is not practicable. One would need numerous tipping rain gauges situated at a given catchment, an idea that Thompson and Potochnik had to forego early in their study. The logistical and regulatory constraints prohibit this in Grand Canyon National Park. 25mm/hour is actually a tested assumption for a critical runoff event based on the work of Melis and others (1996) in Grand Canyon (see p.30). Thompson and Potochnik integrated infiltration rates into their Model 2 with the Total Factors (see p.33-35). These are modifying parameters to the fundamental runoff-erosion model.

Bullet comment #11: To test the eolian restorative process would require more time and effort than could be allotted in the Thompson and Potochnik study. It's a good idea, though.

Thank you for the opportunity to comment. I look forward to hearing the subpanel's response to the above comments.

Best regards,

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Mikebun's Comments -

GMRC Recommendations

The monitoring program thus far has been implemented with good intentions but has generated few substantive results. Many of the problems can be traced back to the original Programmatic Agreement (PA) and the Monitoring and Remedial Action Plan (MRAP). The assumptions and procedures contained in these documents apparently never have been questioned by those responsible for conducting the work. Yet, neither the PA nor the MRAP was framed with reference to a comprehensive archaeological or geomorphological research design. Indeed, no such research design has been developed in the six years since the MRAP was approved. The Historic Preservation Plan (HRP) was supposed to fill this void, however the versions I have seen fall well short of the goal.

It has been assumed from the beginning that there would be "ongoing adverse effects" in the predefined APE as a consequence of dam operation. I witnessed very little evidence that this is the case. The monitoring personnel point to any erosional effects as examples of dam operation impacts. They tend to use the Hereford model in support of such argument. Hereford is not used as a testable hypothesis. Rather, it is used axiomatically to the exclusion of explanation of erosion by competing (and, in my opinion, more compelling) models. Until the causes of erosion can be more plausibly delineated, the definition of the APE must remain an open question. I note, in this regard, that the geomorphology sub panel has recommended expanding the APE to include all Holocene deposits in the main and side canyons. While I agree that expanding the scope of enquiry is absolutely necessary for purposes of research, it seems inappropriate to define the APE in this manner. Such expansion assumes facts not in evidence, e.g., that dam operations have an impact on side canyon deposits. In fact, if the Hereford model is invalidated, the actual APE may be reduced to the areas subject to cut/fill processes immediately adjacent to the river.

As noted by many members of the PEP, neither the ongoing monitoring effort nor the NPS cultural management program as a whole is guided by an overarching research design. It is mandatory that a design of appropriate scope be developed in the very near future. Regionally, it is necessary to place the cultural resources of the Grand Canyon in the broader context of southern Colorado Plateau prehistory. Temporally, it is important to place equal emphasis on all periods represented from the Early Archaic through the Historic period. Currently, the emphasis appears to be centered on the Puebloan sites with no attempt to explore the earlier Holocene deposits that remain intact in the side canyons. Even at that, the mitigative treatments employed on the Puebloan sites are little more than rote procedures conducted in a theoretical vacuum. This should not be allowed to continue.

Finally, database maintenance should be done in-house. The notion that this aspect of research should be delegated to an outside entity is, in my opinion, wrong headed. A database is a dynamic, integral part of an ongoing research project. As such, it should be frequently queried in search of data patterning and new research questions. The current database structure is obsolete and should be redesigned in accord with state-of-the art

relational database standards. This should probably be accomplished through outsourcing with a professional IT consulting firm via an RFP. The RFP should include funding for training of NPS personnel in database maintenance and use.

I have no recommendations as to how responsibilities should be parceled out or which agencies should fund the various aspects of research. Those decisions are internal to the agencies involved. I do question the utility of the monitoring process. What is being accomplished other than documenting the deterioration of sites? The NPS and BOR effort must be recast as a viable research project without regard to the proximate causes of site impacts.